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ABSTRACT

This document represents the fifth of five components of a project conducted to design a comprehensive information system (termed SYSTEM) for identifying, selecting, and disseminating relevant military curriculum materials to civilian vocational and technical education programs. This particular document suggests the design, operating procedures, and implementation strategies for the SYSTEM. In addition, several SYSTEM alternatives are proposed along with some speculation about their possible effects on cost and SYSTEM effectiveness. Chapter I introduces the need for the SYSTEM and discusses SYSTEM requirements. The chapter also covers the design, management, and coordination of the SYSTEM. Chapter II treats in more detail the four interrelated components of the design: Acquisition and selection, materials preparation and referencing, duplication and distribution, and user services. Chapter III contains a recommendation for SYSTEM implementation, a strategy for making materials available, a strategy for achieving user awareness and utilization, and an implementation schedule. Chapter IV discusses SYSTEM alternatives, some of which would increase the scope of work and others which would decrease the scope of work. The potential of an expanded system is also examined. (The final report of the project, which provides an overview of all project components, and reports of the other four components are available and abstracted separately.) (LMS)

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A SYSTEM TO PROVIDE MILITARY CURRICULUM MATERIALS TO CIVILIAN VOCATIONAL AND TECHNICAL EDUCATORS

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DOD Curriculum Materials Utilization
in Vocational Education
Wesley E. Budke, Project Director

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PREFACE

This document is one of several reports of the "Department of Defense Curriculum Materials Utilization in Vocational Education" project (Contract No. 300-750-276) conducted by The Center for Vocational Education at The Ohio State University. The purpose of this report is to describe the design, operating procedures, and implementation strategies for a SYSTEM to make military-developed curriculum materials readily accessible to civilian vocational and technical educators. In addition, several SYSTEM alternatives are proposed along with some speculation regarding their possible effects on cost and SYSTEM effectiveness.

Related documents resulting from this project are:

- *Review of Existing Information Systems and Networks: Applicability to the Design of the SYSTEM*
- *Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures*
- *Index of Military Curriculum Materials Related to Civilian Vocational Programs*
- *Utilization of Military-Developed Curriculum Materials in Civilian Vocational Programs: A School Survey*

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SUMMARY

This report describes the design, operating procedures, and implementation strategies for a SYSTEM to make military-developed curriculum materials accessible to civilian vocational and technical educators. The primary requirements of this SYSTEM are:

1. It should be centralized in terms of acquisition and selection, material preparation and referencing, and duplication of materials.

2. It should interact directly with civilian educators and include the use of a feedback mechanism from the users in order to determine their degree of satisfaction with products and services and to determine additional needs.

3. It should acquire, process, and reproduce or otherwise make available all media formats in which the materials appear.

4. It should maintain a current collection of new and revised materials in occupational areas for use by vocational and technical educators.

Organizationally the SYSTEM is composed of four interrelated components which will provide the necessary products and services to vocational and technical educators. The components are:

1. Acquisition and Selection

2. Materials Preparation and Referencing

3. Duplication and Distribution

4. User Services

The Acquisition and Selection component is primarily responsible for identifying, selecting, and acquiring curriculum materials and preparing bibliographic information. The Materials Preparation and Referencing component prepares catalog entries, indexes material, modifies and packages material, and assembles catalogs. The Duplication and Distribution component receives orders, duplicates material and processes orders, sends material, handles bookkeeping, stores the "master copies," and maintains the materials inventory. User Services negotiates or clarifies the original order, provides technical assistance to users, makes referrals to other agencies, develops and distributes promotional material, distributes catalogs, and assesses user needs and satisfaction.

It is recommended that a minimum of five years be allowed for full implementation. Field study should occur over the first three years of operation to determine the acceptability of the materials, users demand for the various kinds of material (printed, audiovisual, hardware), and the extent of modification required by vocational and technical educators. A differentiated staff of six to eight members should operate the SYSTEM with an annual operating budget of $225,000 to $275,000. An initial investment of $50,000 should be made in a revolving fund which would allow printing ahead of demand and development of a materials inventory. The SYSTEM should be subsidized during at least the first five years to help offset the high acquisition and user services costs.

SYSTEM alternatives consist primarily of increasing or decreasing the level of effort within individual components. Enrichment would occur in the area of additional services and assistance to vocational and technical teachers, whereas, decreases in scope of work would eliminate or reduce the availability of audiovisual material and the field study and user workshop activities.

CHAPTER I

SYSTEM DESIGN

Introduction

Development of a national capacity to disseminate military-developed curriculum materials to the civilian sector has been under discussion for at least the past eight years. Public Law 90-576, the Vocational Amendments of 1968, specifically calls in Section 191, (C) (1) (D), ". . . to survey curriculum materials produced by other agencies of Government, including the Department of Defense." This same section of the law empowers the commissioner to engage non-profit agencies to conduct such surveys and "to promote the development and dissemination of vocational education curriculum materials. . . ."

Although there have been several studies dealing with the utilization and relationship of military-developed curriculum materials to the civilian sector, only one activity[1] prior to this project dealt specifically with the topic of designing, developing, and operating an information system for military curriculum materials. The other studies were concerned with one or more of the following five topics: (1) military and civilian job similarities, (2) use of military-developed materials in civilian schools, (3) acquiring military-developed materials for civilian use, (4) advantages of using military materials, and (5) potential problems in using military materials in civilian settings. Each of the studies concluded that a large number of the curriculum materials developed for military use are also applicable to civilian vocational education programs. Further, these studies supported findings in this project that although the materials exist within the military community, civilian access to these materials is very difficult and sporadic. In addition, information regarding the existence of these materials is not widely disseminated to those who might benefit from their use, resulting in a general lack of awareness of military-developed curriculum materials among vocational teachers.

The interest shown in military-developed curriculum materials is based on several facts. First, the instructional systems design procedures utilized by the military are very rigorous, are comprehensive, and have considerable staff,

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[1]James H. Straubel. *Planning Grant for A Central Clearinghouse Through Which Air Force Vocational/Technical Courses May Be Made Available to Civilian School Systems* (Grant No. OEC-0-70-4980 (399) - Phase II). Washington, D.C.: Aerospace Education Foundation, 1971.

time, and money investments which far exceed that available in the civilian educational sector. The process of curriculum development involves detailed job analyses and formulation of performance objectives. Rigorous evaluation, testing, and necessary revision are integral parts of this process. Second, the curriculum materials are criterion-referenced and job specific. They are intended to train the personnel to perform the necessary tasks in a specific job. Third, the curriculum materials produced are multimedia and include the latest educational technology for the instructional and learning processes. Fourth, military curriculum materials are constantly being updated to include the latest technolcgical information. Finally, current revisions of military training programs are emphasizing individualized self-paced instruction.

These military-developed training programs have proven their ability to provide comprehensive, cost-effective, timely, and accurate training for many occupations in the military. Many of these military occupations are closely allied with or identical to those found in the civilian sector. The Department of Defense has developed a *Military-Civilian Occupational Source Book* (1975) which identifies 335 military occupations having counterparts in the civilian sector. Civilian educators interested in systematic curriculum development, criterion-referenced or competency-based instruction, or self-paced and individualized programs have an opportunity to obtain programs and materials which have already been developed and tested.

Need for the SYSTEM

Justification for development of a SYSTEM[2] is based on three existing conditions. The conditions are described as follows and shown symbolically in Figure 1.

- There is a large number of potential civilian users of military-developed curriculum materials. These users have not been precisely numbered, but presumably include vocational and technical educators at the secondary and post-secondary levels in public and private educational institutions and the training directors in corporations, businesses, and industries. There is evidence of information needs related to curriculum materials in this user community and these needs are quite heterogeneous. This user community has shown an interest in military-developed curriculum materials at various times through several means.

- There are several information centers that provide announcement and availability services for military-developed curriculum materials. These include the Educational Resources Information Center (ERIC),

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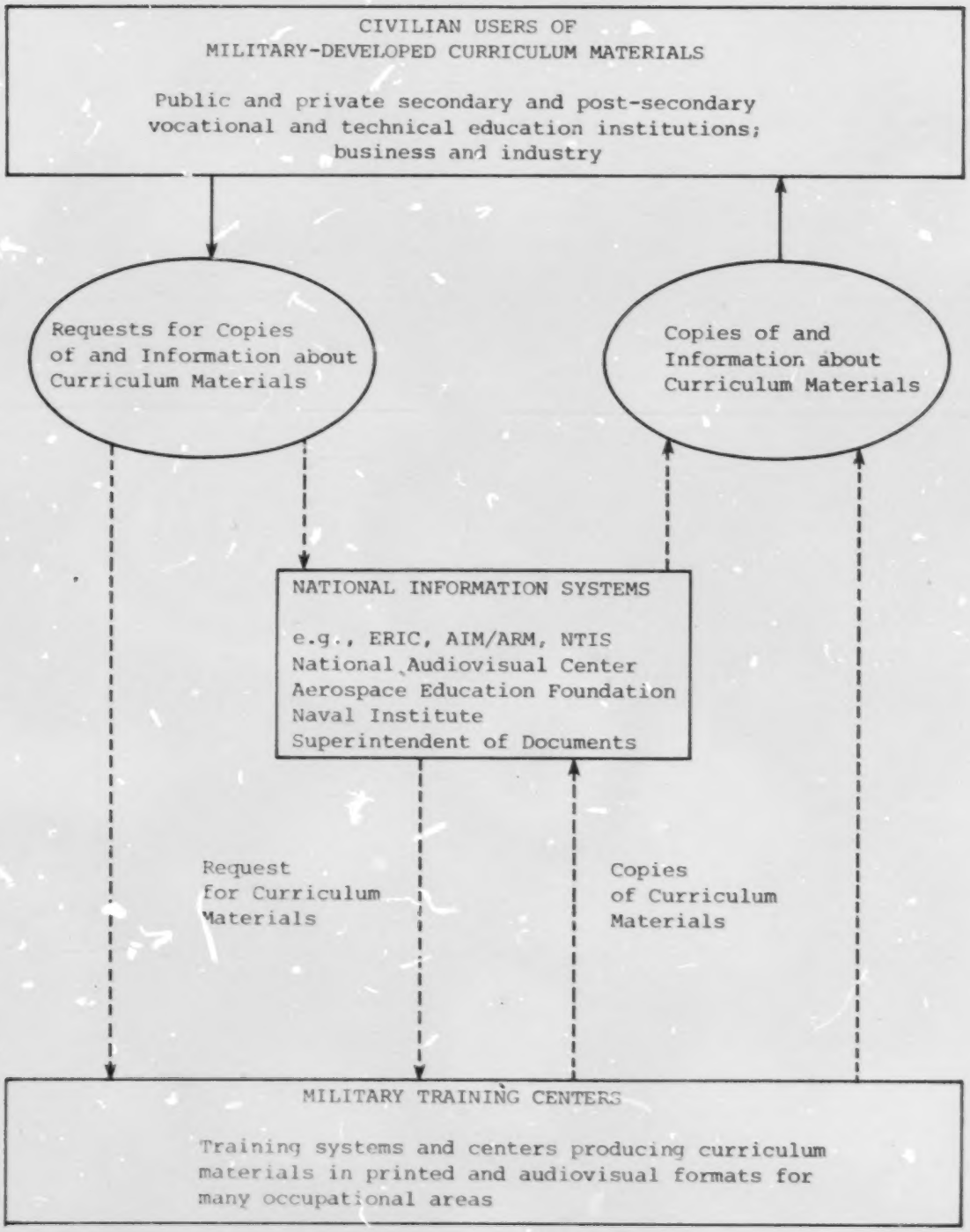
[2]SYSTEM in capitals refers to the physical facilities and financial assets, personnel, and procedures which when designed, tested, operated, evaluated, and revised will identify, acquire, and disseminate military curriculum materials (developed by the Department of Defense and the Coast Guard) to civilian education programs.


CIVILIAN USERS OF
MILITARY-DEVELOPED CURRICULUM MATERIALS
Public and private secondary and post-secondary vocational and technical education institutions; business and industry
Requests for Copies of and Information about Curriculum Materials
Copies of and Information about Curriculum Materials
NATIONAL INFORMATION SYSTEMS
e.g., ERIC, AIM/ARM, NTIS
National Audiovisual Center
Aerospace Education Foundation
Naval Institute
Superintendent of Documents
Request for Curriculum Materials
Copies of Curriculum Materials
MILITARY TRAINING CENTERS
Training systems and centers producing curriculum materials in printed and audiovisual formats for many occupational areas

---→ = Sporadic and unsystematic inquiries, procedures, and responses

Figure 1. Present Unsystematic Means of Obtaining Military-Developed Curriculum Materials

National Technical Information Service (NTIS), Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM), National Audiovisual Center (NAC), the Superintendent of Documents (SD), Aerospace Education Foundation (AEF), and U.S. Naval Institute (NI). The collective capability of existing centers for meeting user needs is rather high, but there is a limited amount of coordination among them. Further, ERIC, NTIS, AIM/ARM, and SD are limited to reproduction of printed materials. The National Audiovisual Center, Aerospace Education Foundation, and U.S. Naval Institute are the only information centers which provide audiovisual material reproduction services, but on a rather small scale.

. There have not been organized efforts to improve the overall match between the curriculum needs of vocational educators and training directors and the collective capabilities of the nation's curriculum materials information centers in terms of delivery of military-developed curriculum materials. Significant improvements in the match could result in improved delivery and use of existing military-developed curriculum materials by civilian vocational and technical educators, thus increasing the taxpayers' return on the military investment in instructional materials. At the same time, vocational and technical teachers could gain a greater return on their investment by purchasing and using already developed and tested materials.

The relatively low level of match which exists between information needs and information services continues to exist for several reasons:

1) Vocational and technical educators are not aware of the materials which are available and may therefore fail to draw upon information resources that may meet specific needs.

2) Information centers are not always well informed on the information needs of the users, thus, they fail to provide services that match true needs.

3) Information centers may lack incentive and resources for making significant improvements in their individual services and for working closely with other information centers to meet the collective needs of users.

4) Because no centralized information system for military curriculum materials exists, information centers' responses to user needs reflect only part of the total available information.

Development of an overall system to make military-developed curriculum materials available to civilian educators and trainers would significantly reduce this mismatch.

SYSTEM Requirements

The purpose of the SYSTEM is to make military-developed curriculum materials available for utilization in civilian vocational and technical education programs.

The SYSTEM would provide a closer match between the curriculum needs of vocational and technical educators and the applicable military curriculum materials. In order to effectively bring about this match, the SYSTEM should possess the following characteristics:

1. It should be centralized in terms of acquisition and selection, material preparation and referencing, and duplication of materials.

2. It should interact directly with civilian educators and include the use of a feedback mechanism from the users in order to determine their degree of satisfaction with products and services and to determine additional needs.

3. It should acquire, process, and reproduce or otherwise make available all media formats in which the materials appear.

4. It should maintain a current collection of new and revised materials in occupational areas for use by vocational and technical educators.

Design

The design of a SYSTEM to make military-developed curriculum materials available to civilian vocational and technical educators necessitates translation of SYSTEM requirements into specifications for individual component activities and relationships.

If the SYSTEM is to function effectively and avoid duplication of products and services provided by existing information systems, it will be necessary to establish formal operating relationships with other agencies. Prominent among these agencies with which working arrangements need to be developed are the Aerospace Education Foundation, the U.S. Naval Institute, the National Audiovisual Center, the National Technical Information Service, the Superintendent of Documents, Educational Resources Information Center, Abstracts of Instructional and Research Materials in Vocational and Technical Education, and the National Network of Curriculum Coordination Centers. The relationships between the SYSTEM and other agencies, information systems, civilian educators, and the military are shown in Figure 2.

Organizationally the SYSTEM will be composed of four interrelated components which will provide the necessary products and services to vocational and technical educators. The components are:

1. Acquisition and Selection

2. Materials Preparation and Referencing

3. Duplication and Distribution

4. User Services

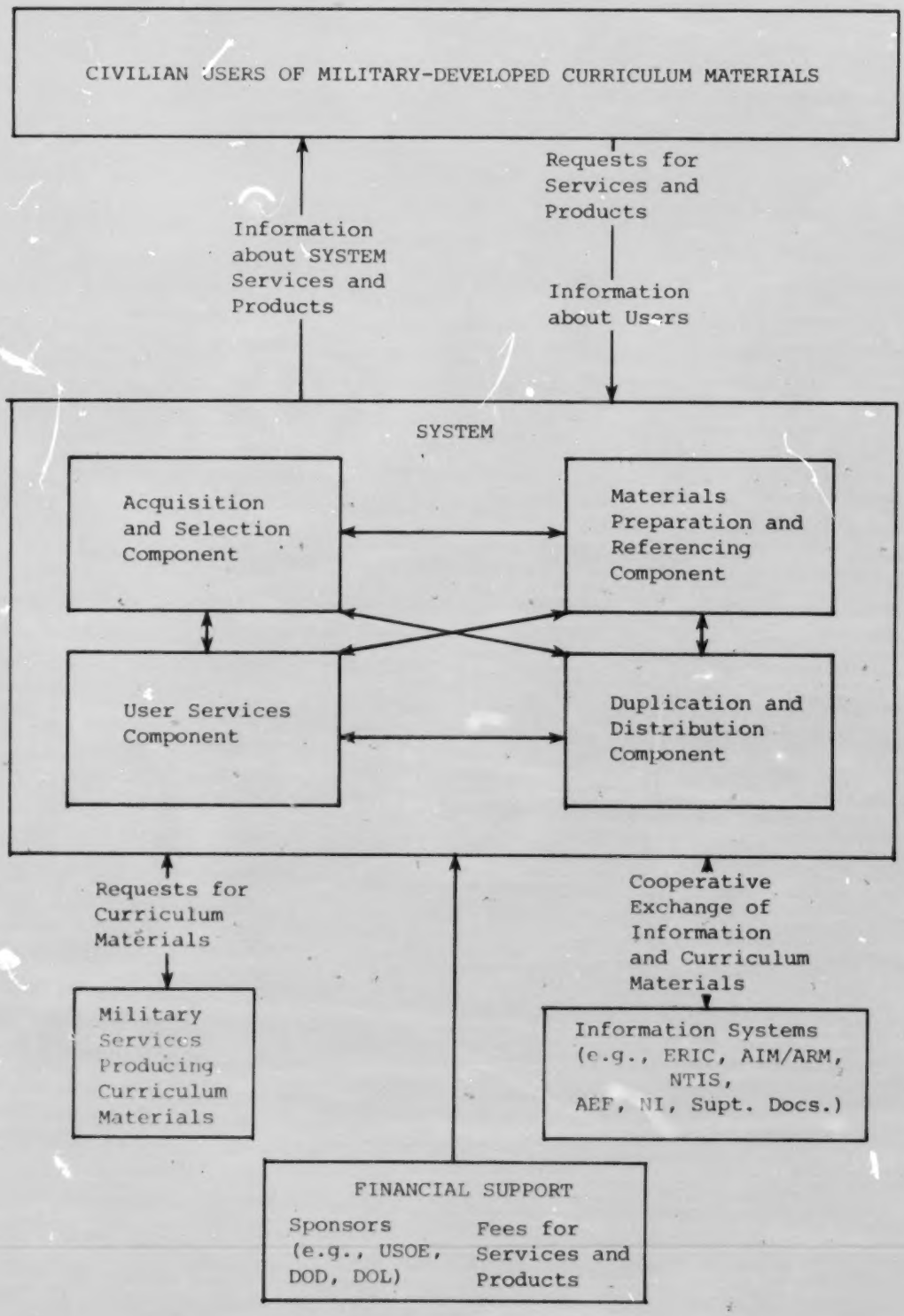

CIVILIAN USERS OF MILITARY-DEVELOPED CURRICULUM MATERIALS
Information about SYSTEM Services and Products
Requests for Services and Products
Information about Users
SYSTEM
Acquisition and Selection Component
Materials Preparation and Referencing Component
User Services Component
Duplication and Distribution Component
Requests for Curriculum Materials
Cooperative Exchange of Information and Curriculum Materials
Military Services Producing Curriculum Materials
Information Systems (e.g., ERIC, AIM/ARM, NTIS, AEF, NI, Supt. Docs.)
FINANCIAL SUPPORT
Sponsors (e.g., USOE, DOD, DOL)
Fees for Services and Products

Figure 2. SYSTEM Design

Educators' primary point of access to the SYSTEM will be through the User Services component. The Acquisition and Selection and Materials Preparation and Referencing components will interact with the technical training sections of the military services and other information centers.

A more detailed description of the activities and relationships within the four SYSTEM components follows. Chapter II provides the detailed procedures on component development and operation.

Acquisition and Selection

The Acquisition and Selection component of the SYSTEM is primarily responsible for identifying, selecting, and acquiring the military curriculum materials which are relevant to the needs of civilian vocational and technical educators. The major activities of this component (see Figure 3) include:

1. Identifying of military-developed curriculum materials appropriate for use in civilian vocational and technical programs. Materials may be identified by reviewing descriptions in military formal schools catalogs or by routine routing of new or revised material by the military.

2. Selecting of curriculum materials based upon selection factors such as needs priorities, level of training, and adaptability.

3. Acquiring of selected curriculum materials for courses from the military by placing telephone, or mail orders, or through staff visitation.

4. Preparing of curriculum materials bibliographic information to record disposition of ordered material, and to serve as a reference to materials obtained by the SYSTEM.

To ensure that the SYSTEM be as effective as possible, the persons operating the Acquisition and Selection component must be aware of the kinds of materials civilian vocational and technical educators need, and it must also have access to military curriculum materials in order to determine whether there are materials which may satisfy this need. This requires well defined working relationships not only with the military, but also among components within the SYSTEM.

Contacts need to be made and procedures need to be established with the technical training headquarters in the Air Force, Army, Coast Guard, Marine Corps, and Navy for requesting and reviewing materials. Because most of the materials will be new or revisions of those already acquired, mechanisms for routinely receiving these newly developed materials from the military need to be developed with the Department of Defense.

Within the SYSTEM, the User Services component will provide the Acquisition and Selection component with information on users' curriculum needs, desires for particular media formats, and reactions to materials cost and information on

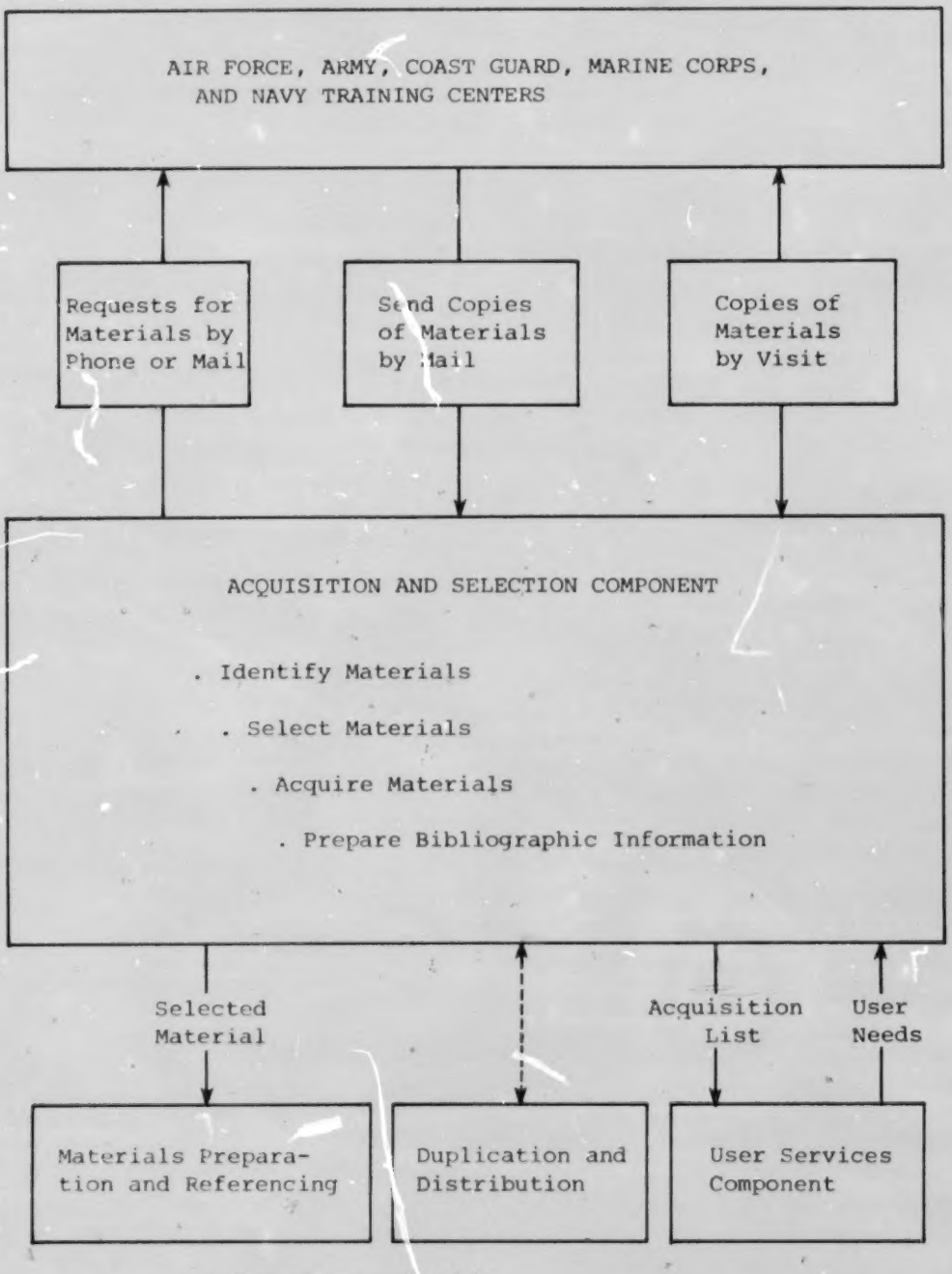

AIR FORCE, ARMY, COAST GUARD, MARINE CORPS,
AND NAVY TRAINING CENTERS
Requests for Materials by Phone or Mail
Send Copies of Materials by Mail
Copies of Materials by Visit
ACQUISITION AND SELECTION COMPONENT
. Identify Materials
. Select Materials
. Acquire Materials
. Prepare Bibliographic Information
Selected Material
Acquisition List
User Needs
Materials Preparation and Referencing
Duplication and Distribution
User Services Component
- - - - informal relationship
Key _____ formal relationship

Figure 3. Acquisition and Selection Component

equipment requirements. The Acquisition and Selection component should reciprocate by continually keeping User Services aware of newly acquired materials which will be available after processing.

The efficiency of this component is dependent upon receiving accurate information on user needs and the establishment of clear and direct lines of communication with military technical training centers.

Materials Preparation and Referencing

The Materials Preparation and Referencing component is responsible for codifying and modifying[3] the military curriculum materials which have been selected for use in civilian vocational and technical schools and preparing catalogs which describe these various course materials. The major activities of the component include:

1. Preparing catalog entries which describe the material in sufficient detail to allow educators to determine whether or not it will be useful in their program. Included here is bibliographic information prepared by the Acquisition and Selection component.

2. Indexing of courses by *Dictionary of Occupational Titles* Code, Department of Defense number, U.S. Office of Education Code, and U.S. Office of Education occupational cluster.

3. Modifying and packaging of curriculum materials for easy understanding and use by civilian educators.

4. Assembling curriculum materials descriptions into job related categories or clusters for distribution to specialized groups of vocational and technical educators.

Although the Materials Preparation and Referencing component does not have a direct linkage outside the SYSTEM (see Figure 4), it will provide catalogs to potential users through the User Services component and will receive user satisfaction information from purchasers of the material.

The Materials Preparation and Referencing component will be most closely associated with the military-developed curriculum materials, thus most knowledgeable about their content and format, and will rely heavily on the information received from those who have purchased and used the material to determine the extent to which modifications are necessary or user instructions are required. It is recommended that only minor modifications be made in the material, such as removing the military-specific information and providing a cover

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[3]Modification of materials by the SYSTEM is to include deletion of military-specific parts of a course (e.g., orientation to military regulations), but will not include editing or rewriting to eliminate isolated references to the military.

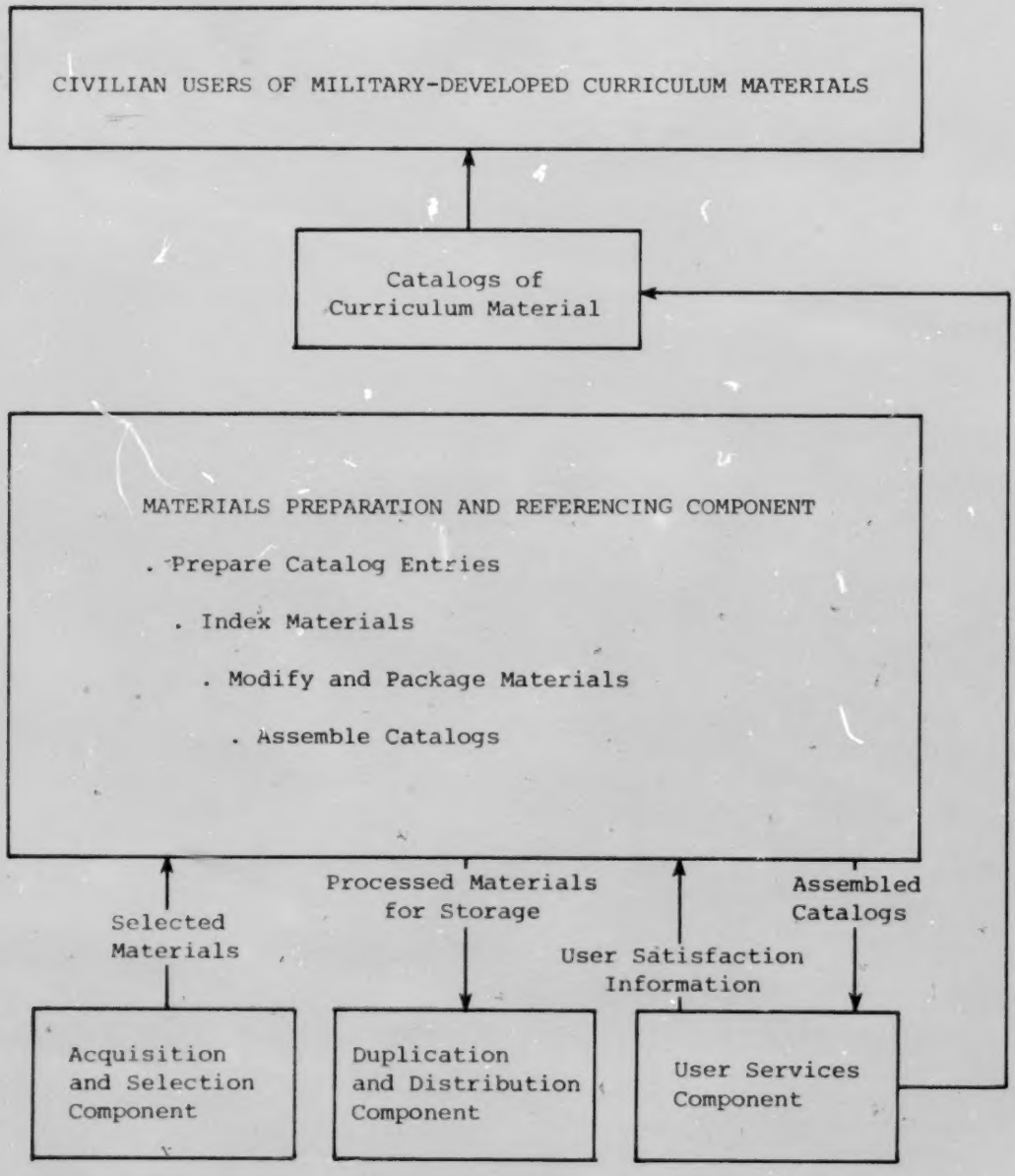

Figure 4. Materials Preparation and Referencing Component

sheet explaining the modifications and noting the availability of printed and audiovisual material not provided.

Generally, the SYSTEM will make available all relevant printed material and appropriate slides and transparencies. Commercially-prepared audiovisuals will be referred to the developer and military films should be made available through the National Audiovisual Center. When processing activities have been completed, the "master copy" of the materials will be sent to the Duplication and Distribution component for filing.

The Materials Preparation and Referencing component also has responsibility for preparing curriculum packages that can be easily understood and used by civilian vocational and technical educators and providing sufficient information about the materials to them to decide whether or not the materials satisfy their needs.

Duplication and Distribution

The Duplication and Distribution component is responsible for duplicating military curriculum materials and distributing them. The major activities of the component include:

1. Receiving orders for curriculum materials in the SYSTEM through the User Services component.

2. Duplicating curriculum materials.

3. Preparing materials for shipment to the requestor.

4. Providing the bookkeeping for the SYSTEM--billings, receipt of money, and record keeping.

5. Maintaining and storing the "Master Copy" of curriculum materials.

6. Maintaining an inventory of curriculum materials which can be used to fill customer orders.

The Duplication and Distribution component has direct contact with civilian vocational and technical educators through filling and mailing orders (see Figure 5). Approximately 90 percent of the orders should be processed for delivery in less than two weeks. Any delay in sending the material should be immediately communicated to the requestor. Referrals to other sources for those parts of the curriculum which are not available from the SYSTEM should be sent along with the shipment of materials. A pre-addressed, postage paid user satisfaction and user needs form should be enclosed with each shipment of material to secure information about the use of the material and the desire for more.

This component should initially experiment with reproduction of all types of media: printed, videotapes, audiotapes, slides, transparencies, films, and

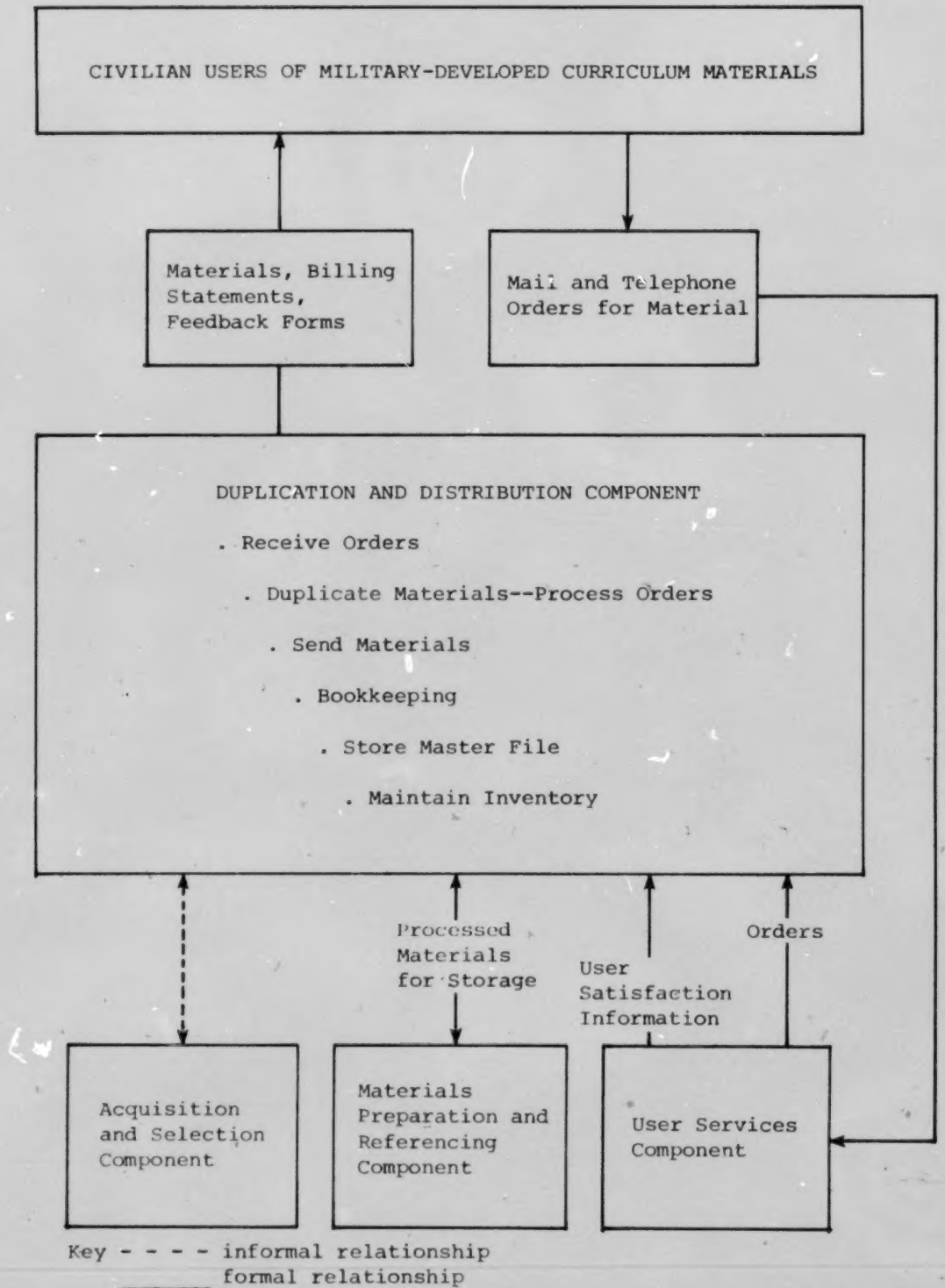

Figure 5. Duplication and Distribution Component

filmstrips. This would also allow for some experimentation in converting various media to a standard media, for example, converting charts, films, slides, and transparencies to videotape.

The effectiveness of the SYSTEM will be determined by the quality of the services and products provided. Procedures for ordering curriculum material should be as simple as possible and vocational and technical educators should receive explicit instructions for ordering either by mail or telephone. Cost of materials and quality of reproduction should compare favorably with other information centers. It is recommended that the purchase price cover only the cost of the materials and handling; otherwise the cost would not be competitive with commercially prepared material.

The Duplication and Distribution component will receive custody of the materials "Master Copy" from the Materials Preparation and Referencing component and is responsible for maintaining and inventory of materials for distribution. One of the most difficult tasks this component will have is to estimate the demand for various curriculum materials. Duplication on demand is a very expensive process often requiring the use of photocopy equipment which produces copy of less than desirable quality and at great expense. To take advantage of high volume presses and higher quality reproduction it will be necessary to estimate the probable sales volume of certain items so that multiple copies can be produced during a single printing and stored for future sale. To allow duplication of materials prior to payment, a revolving fund of perhaps $50,000 should be established by the SYSTEM for a curriculum materials inventory. It may also be desirable for the Duplication and Distribution component to cooperate with the Acquisition and Selection component in arranging purchases of multiple copies of some materials directly from the military.

User Services

The User Services component is responsible for negotiating orders for materials, assessing user satisfaction and needs, providing technical assistance, and distributing materials catalogs and SYSTEM promotional material. The major activities of the component include:

1. Receiving and negotiating requests for materials. Requests for materials contained in the SYSTEM will be sent directly to the Duplication and Distribution component for filling and other requests will be referred to other agencies. General information requests about the SYSTEM will also be handled by this component.

2. Providing technical assistance to vocational and technical educators in the form of workshops to explain the military-developed curriculum material and offer suggestions on how it may be adapted to civilian vocational and technical programs.

3. Referring users to other information systems or agencies for material unavailable from the SYSTEM.

4. Developing and distributing SYSTEM promotional materials (e.g., brochures and newsletters).

5. Distributing materials catalogs to target audiences on a SYSTEM mailing list.

6. Assessing user satisfaction and needs through letters, telephone calls, user satisfaction cards enclosed in orders, and through field studies conducted on user acceptance of the material.

Contact with the SYSTEM by civilian vocational and technical educators will be made through the User Services component (Figure 6). All requests for materials and services will be reviewed, and those pertaining to materials contained in the SYSTEM will be sent to the Duplication and Distribution component. The Educational Resources Information Center (ERIC), Abstracts of Instructional and Research Materials in Vocational and Technical Education (AIM/ARM), the National Technical Information Service (NTIS), the U.S. Naval Institute (NI), the Aerospace Education Foundation (AEF), and the Superintendent of Documents--Government Printing Office (GPO) are agencies to which requests may be referred for materials not provided by the SYSTEM. It is essential that the User Services component know the capabilities and capacity of each of these information systems, be thoroughly familiar with their products and services, and establish referral procedures with these agencies. However, the SYSTEM should not serve as an intermediary in delivering the products of other agencies to the user.

Currently, there is some uncertainty about the likelihood of wide acceptance of and high demand for military-developed curriculum materials by civilian vocational and technical educators. Although studies have shown that the materials are applicable for civilian use, no hard evidence of acceptability or demand by the "average" vocational or technical teacher exists. Therefore, it is appropriate and perhaps necessary during the initial two years of SYSTEM operation to pursue the following questions:

1. What perception do civilian vocational teachers have of military-developed curriculum materials?

2. What kinds of modifications should be made in military curriculum materials?

3. How satisfied are civilian vocational and technical educators with military curriculum materials?

These and perhaps many more questions need to be answered before making firm policies about packaging and modification of materials or dissemination strategies.

The User Services component will also have contact with vocational and technical educators by providing technical assistance. This assistance may be in the form of workshops during the first three or four years and provided at SYSTEM expense. The workshops should be conducted at the state level to acquaint potential users with the material and the SYSTEM. Local agencies or

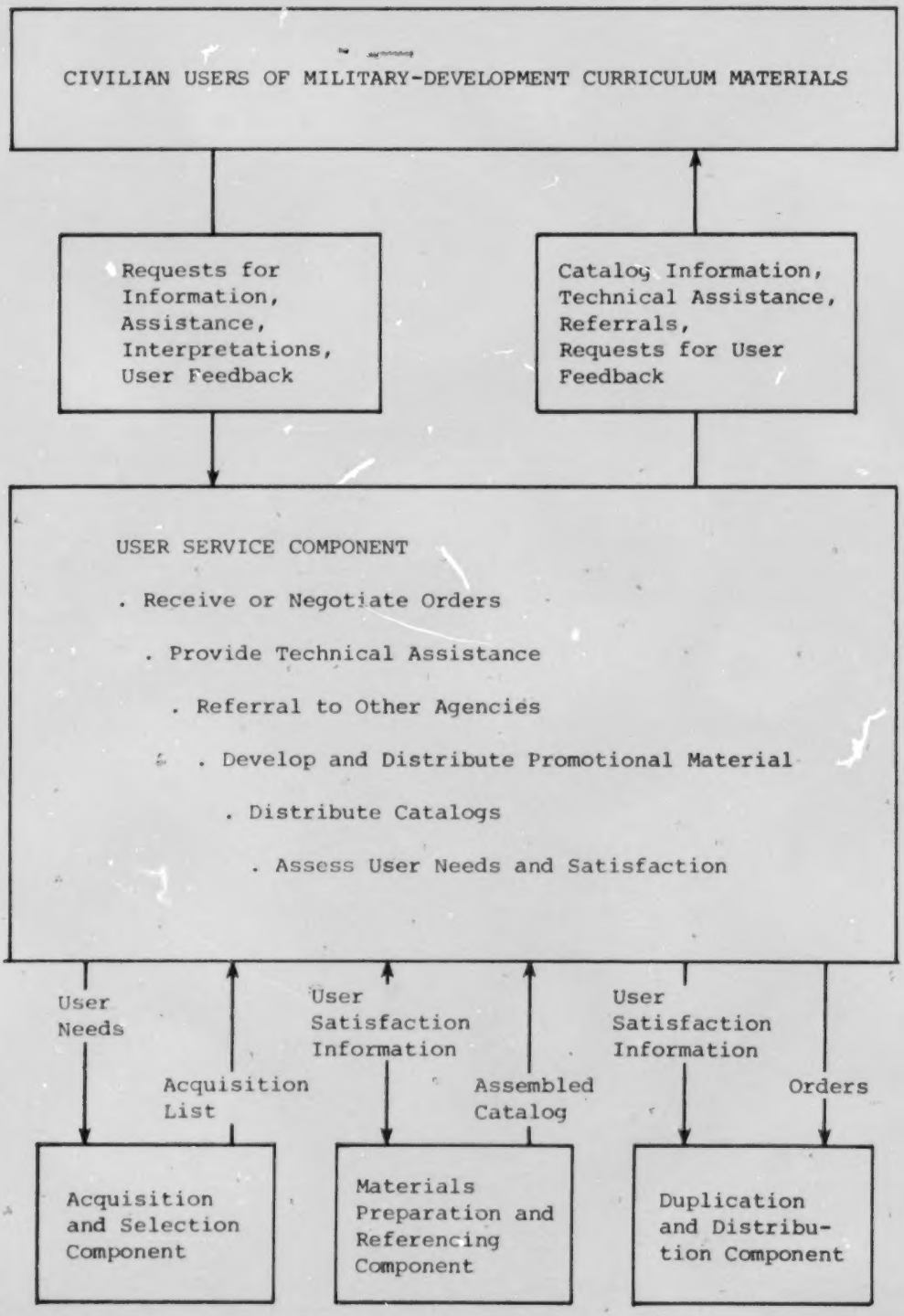
CIVILIAN USERS OF MILITARY-DEVELOPMENT CURRICULUM MATERIALS
Requests for Information, Assistance, Interpretations, User Feedback
Catalog Information, Technical Assistance, Referrals, Requests for User Feedback
USER SERVICE COMPONENT
. Receive or Negotiate Orders
. Provide Technical Assistance
. Referral to Other Agencies
. Develop and Distribute Promotional Material
. Distribute Catalogs
. Assess User Needs and Satisfaction
User Needs
Acquisition List
User Satisfaction Information
Assembled Catalog
User Satisfaction Information
Orders
Acquisition and Selection Component
Materials Preparation and Referencing Component
Duplication and Distribution Component

Figure 6. User Services Component

other groups may want to secure the assistance of trained state staff, or SYSTEM staff at their own expense.

This component will also develop and maintain a categorical mailing list of vocational and technical educators who are potential consumers of military-developed curriculum material. A brochure will be designed and distributed describing the capacity and capability of the SYSTEM. The occupational cluster catalogs developed by the Materials Preparation and Referencing component will be distributed to appropriate audiences. User Services also assumes responsibility for identifying and testing dissemination strategies and establishing linkages with user groups.

Internally, the User Services component serves as the nerve center of the entire SYSTEM. This component provides user needs information to the Acquisition and Selection component and user satisfaction information about the material and the SYSTEM to the Duplication and Distribution and Materials Preparation and Referencing components.

Management and Coordination

The general management and coordination of the SYSTEM activities should come under the purview of a project director who is available to devote at least 50 percent of his/her time to this process. Each of the four components should have a unit leader or head which reports directly to the SYSTEM director. Figure 7 shows a formal organizational structure which may exist within the SYSTEM.

The following suggestions in the areas of staffing, facilities, and equipment should provide some guidance to those preparing to implement the SYSTEM.

Staffing

The SYSTEM staff should be a balance of professional, technical, and clerical persons with education and experience in the area of their assignment.

Project Director. The project director should be responsible for overall management and control of the SYSTEM internally as well as relating to military establishment and civilian vocational and technical education. The director should have administrative experience and a background in vocational or technical education. In addition he/she should be familiar with military training and protocol and understand information systems.

Professional Staff. A senior professional staff in addition to the project director may be desirable to work in the areas of curriculum modification and material dissemination. This individual should have vocational or technical education experience and be knowledgeable about dissemination and diffusion of information and materials within the vocational and technical education community.

Technical Staff. Two to three technical staff may be necessary to work in the areas of abstracting and indexing, revising and repackaging materials, and

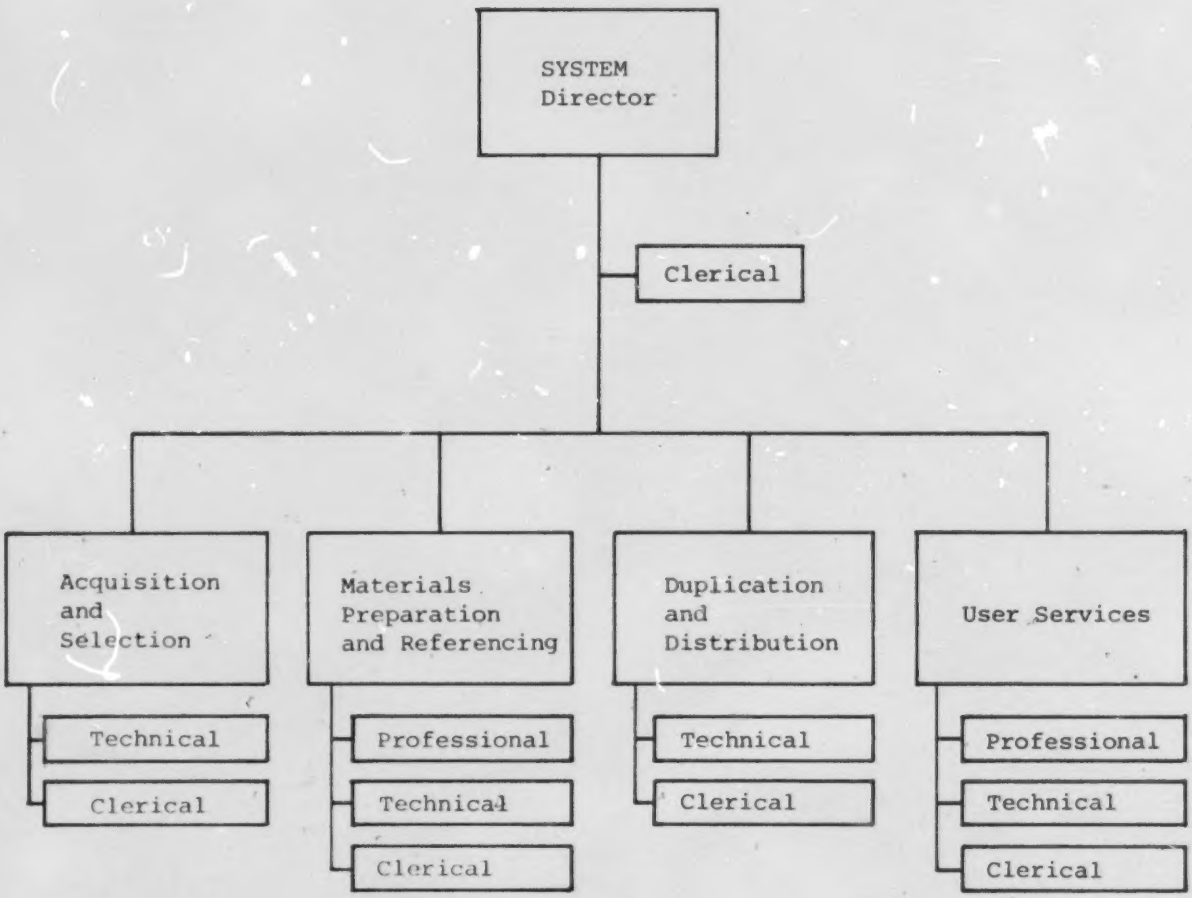

Figure 7. SYSTEM Organizational Structure

duplication. Technical staff need training and experience in these areas while knowledge and understanding of vocational and technical education, curriculum, and information systems are desirable.

Clerical Staff. Approximately two secretarial or clerical persons will be needed to provide the necessary support to senior and clerical staff. Their duties will generally include typing, filing, telephone answering, billing, and bookkeeping.

The level of staffing will probably be higher during the initial two to three years of operation due to greater emphasis on acqusition of materials and user services. It should be possible and desirable to reduce the number of senior professional staff once the SYSTEM becomes established.

Facilities

Adequate room should be provided to house six to eight staff members. Due to the variation in activity (e.g., abstracting and indexing, modification and packaging materials, catalog preparation, filling orders, duplicating materials, and user services) it would be desirable to have at least three or four separate rooms. All components of the SYSTEM should be in close proximity to each other and near mail service. If duplication and reproduction services are to be subcontracted, they should be fairly near to reduce communication problems and transfer delays. Sufficient room should also be provided for storage of the "Master Copies" and maintenance of an operating inventory. A minimum of 300 square feet should be allotted for storage and inventory purposes.

Equipment

Various types of equipment are needed for efficient operation of the SYSTEM. The equipment necessary for general operation includes desks, chairs, filing cabinets, and telephones. All clerical personnel will need a typewriter, preferably an IBM Selectric II with a correction key. Each component of the SYSTEM has some unique requirements for equipment. These requirements are discussed below by component.

Acquisition and Selection Component. Several projectors should be available to the staff for viewing and selecting audiovisual materials. These projectors include: (a) a 16 mm film projector, (b) a super 8 film projector, (c) an overhead transparency projector, and (d) a 35 mm slide projector. Other desirable equipment are a three-shelf book cart, book cases with adjustable shelving to accommodate the various sizes of the materials, and standard library wooden reference units for storage of index cards.

Materials Preparation and Referencing Component. An IBM Electronic Composer Typewriter may be desirable for camera-ready preparation of the catalogs. This machine can justify both right and left margins as well as print in 8, 10, and 12 point sizes. The variation of sizing will allow the distinctions and flexibility desirable in formating catalogs.

Reproduction and Distribution Component. The maintenance of an inventory and storage of the "Master Copy" of materials requires specialized kinds of equipment. The "Master Copy" of printed materials should be stored in five-drawer filing cabinets to prevent dust from destroying the materials and reduce the yellowing of paper over time. The printed material inventory should be placed on steel shelving with double faced stacks for efficient use of space in the storage area.

Specialized cabinets should be secured for storing filmstrips, tape cassettes, audiotapes, motion pictures, records and transparencies, and slides. An alternative to motion picture cabinets is open-shelf film storage, requiring a rack about 88" high, 36" wide, and 12" deep for storage of 162 film cans.

For reproduction of printed material, a photocopy machine and offset press should be immediately available to the staff. The photocopy machine should be able to reduce a 14" x 18" page to 8½" x 11". The offset press machine, which includes a master producer and a collator, should be able to reduce a 11" x 14" page to 8½" x 11" and be able to print in both black and white and color. In the area of audiovisual reproduction, several very specialized pieces of equipment are needed to make high quality duplications of slides, transparencies, audiotapes, videotapes, and films. Initially, it may be prudent to rent this equipment or subcontract duplication until the kinds and quantity of audiovisual materials, the quality, and the cost of reproduction can be accurately assessed.

User Services Component. It may be desirable to install a WATS line or some other toll free number for vocational and technical educators to use so they can immediately and easily secure needed information about the SYSTEM and its products.

CHAPTER II

COMPONENT DEVELOPMENT AND OPERATING PROCEDURES

Component development and operating procedures have been developed for use in implementing and pilot testing the SYSTEM. The four components identified in Chapter I will be discussed in greater depth in this section. The components are: (1) Acquisition and Selection, (2) Materials Preparation and Referencing, (3) Duplication and Distribution, and (4) User Services. The suggestions are based on project staff's experience with this and other related projects and on recommendations made by consultants. This document should be revised as more information is gathered on user needs during pilot testing on the SYSTEM.

Figure 8 shows the SYSTEM flowchart and identifies the major activities in each component. The following discussion will parallel the flowchart activities and the reader is encouraged to refer to Figure 8 periodically to maintain SYSTEM perspective and to understand activity relationships.

Acquisition and Selection Component

The four major activities in the Acquisition and Selection component are identification of course materials, preparation of bibliographic information, selection of materials, and acquisition of materials.

Identification of Materials

The materials identification activity consists of securing copies of the formal school catalogs and plan of instruction or curriculum outlines so that the titles and general purpose of the various courses can be identified.

Catalog Procurement. The process of collecting curriculum materials from the military begins with a meeting of SYSTEM staff and representatives of the Department of Defense. During this meeting, the chain of command will be described and the names of contact persons obtained for the training branch in each service. An example of the hierarchy for working in each service can be found in Appendix A. Below is listed the technical training headquarters for each of the five services:

Air Force: Air Training Command
Randolph Air Force Base
San Antonio, TX

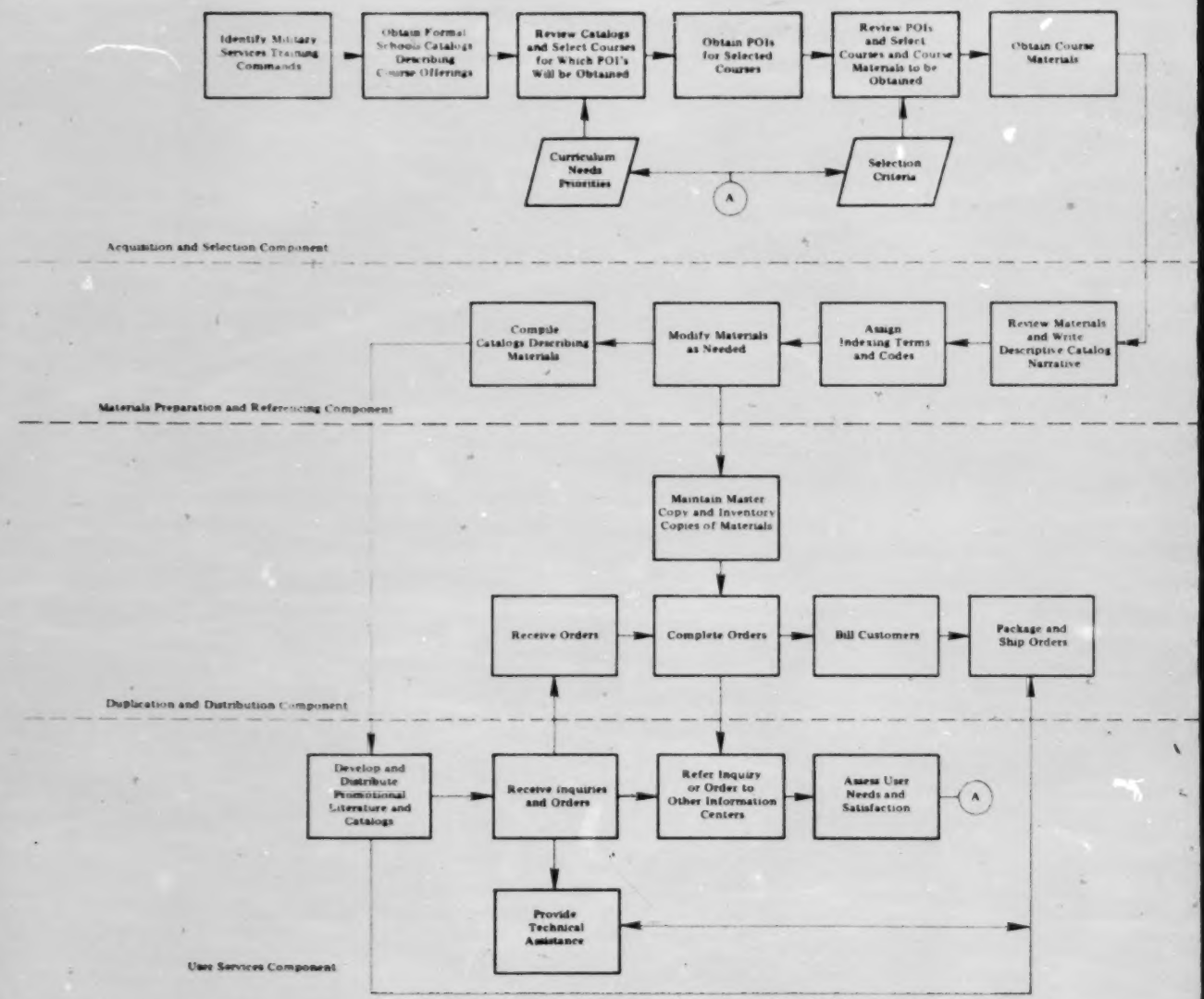
Identify Military Services Training Commands
Obtain Formal Schools Catalogs Describing Course Offerings
Review Catalogs and Select Courses for Which POI's Will be Obtained
Obtain POIs for Selected Courses
Review POIs and Select Courses and Course Materials to be Obtained
Obtain Course Materials
Curriculum Needs Priorities
Selection Criteria
A
Acquisition and Selection Component
Compile Catalogs Describing Materials
Modify Materials as Needed
Assign Indexing Terms and Codes
Review Materials and Write Descriptive Catalog Narrative
Materials Preparation and Referencing Component
Maintain Master Copy and Inventory Copies of Materials
Receive Orders
Complete Orders
Bill Customers
Package and Ship Orders
Duplication and Distribution Component
Develop and Distribute Promotional Literature and Catalogs
Receive Inquiries and Orders
Refer Inquiry or Order to Other Information Centers
Assess User Needs and Satisfaction
A
Provide Technical Assistance
User Services Component

Figure 8. SYSTEM Flow Chart

Army:	Army Training and Doctrine Command (TRADOC) Fort Monroe, VA
Coast Guard:	Commandant of Training Education and Training Division United States Coast Guard Department of Transportation Washington, DC
Marine Corps:	Military Training & Education Branch Marine Corps Headquarters, Navy Annex Washington, DC
Navy:	Chief of Naval Technical Training Pensacola, FL

In addition to identifying linkages with each service, catalogs listing all the courses taught in each branch of the service must be obtained. These publications are:

Air Force:	*Formal Schools Catalog*
Army:	*Formal Schools Catalog*
Coast Guard:	*Personnel Manual*
Marine Corps:	*Formal Schools Catalog*
Navy:	*Catalog of Navy Training Courses*

These catalogs should be ordered from the training headquarters either by mail or telephone. At the end of the first year of SYSTEM operation current catalogs for future ordering information should be obtained. An agreement should be established with each service to automatically send a new catalog when it is published. The catalogs are frequently used to identify courses, prerequisites for these courses, number of hours per course, and course number.

Plan of Instruction and Curriculum Outline Procurement. Plans or programs of instruction (POIs) and curriculum outlines describing the course content have been developed for each military course. In selecting POIs to be ordered for review, selection criteria identified in the *Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures*[4] report are used. The criteria used in selecting course POIs or curriculum outlines are:

1. The course must relate specifically to the curriculum priorities as identified in the state and post-secondary surveys.

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[4]Wesley E. Budke, *Military Curriculum Materials Identification, Selection, and Acquisition Strategies and Procedures.* (A report of the DOD Curriculum Materials Utilization in Vocational Education Project--Appendix B of the final report.) Columbus, Ohio: The Center for Vocational Education, The Ohio State University, June 1976.

2. The course is basic, or the initial course in a series required for training in a particular Military Occupational Specialty (MOS), Air Force Specialty Code (AFSC), or rating.

After selecting specific courses for which POIs or curriculum outlines are to be ordered, a check is made against the index files to determine whether the course has already been obtained. If it is already in the files, the course should be deleted from the list of courses to be ordered. If the course is not on file, the title should be continued on the list of POIs or course outlines to be ordered. POIs and curriculum outlines should be ordered by letter, so there will be a record of what has or has not been ordered and received.

After orders have been sent to the respective military branches, a periodic check should be made to determine if the POIs or curriculum outlines have been received. If they have not been received within one month, a follow-up order should be made by mail or telephone.

All orders should be filed in a notebook to assist in monitoring ordering information. Notebook categories might include orders, correspondence, and pending action. Items received should be checked off as they arrive and follow-up letters sent if complete information has not been received on all items ordered.

Preparation of Bibliographic Information

Upon receipt of plans of instruction or curriculum outlines, bibliographic information should be recorded. This should be done on index cards appropriate for filing. The POIs or curriculum outlines should be filed by course title, since it would assist in quickly identifying a request for a specific course, as well as for referencing and cross-referencing.

In addition, the clarity of the military course titles lends itself to the creation of a subject index. This index may be developed by using key words in the course title. If the title does not seem to have a key word with which to identify the course, the *Thesaurus of Engineering and Scientific Terms* should be used to identify a key word for the course.

Three other index card files may be developed for use as references in assisting the user. These index files include a U.S. Office of Education cluster file, a *Dictionary of Occupational Titles* number file, and a U.S. Office of Education number file. For those educators who are now using these types of numbering or clustering in their occupational areas, the SYSTEM will be able to help vocational and technical educators more quickly by having these files available.

Upon completing bibliographic and index cards for each POI or curriculum outline, the document should be given to a reviewer for selection or rejection.

Selection of Materials

Selection of military curriculum materials to be acquired should be handled by a reviewer with some civilian vocational teaching experience. The selection takes place by reviewing course objectives, references, audiovisual aids, and training aids identified in the POI or curriculum outline. Suggested criteria to be applied when reviewing these documents in addition to those listed in a previous section titled "Identification of Materials" are:

1. The course does not contain too much material specific to the military mission.

2. The course does not require highly specialized, expensive training materials.

3. The majority of the support materials have been developed by the military with only a minor reliance on commercial materials (the business and office education and data processing areas are examples where the military relies heavily upon commercially prepared materials).

4. The materials should be of a standard size and print and have sufficient contrast to clearly reproduce.

5. The materials should be necessary or required for the actual delivery of the instructional program--in other words, can it be eliminated without seriously affecting the training?

6. The materials should contain few cases where copyright releases must be secured.

The reviewer should indicate "accepted" or "rejected" on the document, the date, and his/her initials. In addition, it would be helpful if the reasons for rejection were noted on the material.

Acquisition of Materials

After review of the course POI or curriculum outline and acceptance by the reviewer, the file should be checked to see if the course materials are already in the SYSTEM. If the materials are in the SYSTEM, no further action needs to be taken. If the materials for a course are not in the SYSTEM, an order should be made by letter to the technical training headquarters of the service branch. An order of materials should include a request for lesson plans, student workbooks, instructor guides, study guides, handouts, programmed texts, and audiovisual materials.

After the materials have been requested for a course, the POI or curriculum outline should be stored in the master storage area. It should be stored alphabetically by title in a filing cabinet and categorized by military branch.

Follow-up requests by mail or telephone may be necessary if materials have not been received within a month. Sometimes it may be necessary to visit a base in order to collect the materials. Should this occur, at least three weeks notice should be given to the military prior to the visitation.

When reviewing military curriculum materials at the base, care should be taken to apply the selection criteria mentioned previously. If the course meets the criteria, arrangements should be made for shipment of the materials. If limited copies of a document are available, arrangements should be made during the visit to have the material duplicated. If the material consists of large manuals and there are not extra copies at the base, the original source of the materials should be identified. Such items as field manuals and technical manuals should be ordered from one central location identified by the military.

When materials are received from the military, they should be sorted according to type (study guides, workbooks, handouts, charts, or programmed texts). Each item should have or immediately be assigned the POI course number. If individual course numbers are not used in the particular branch of the service, the DOD code should be used. (See Appendix B for individual service coding information.) This permits individual items to be quickly linked with the course. All materials should be assembled in the order in which they are used in the course.

After sorting the materials, each item should be checked against the listing in the POI or curriculum outline to determine whether the course is complete. The course materials should then be packaged with the POI or curriculum outline and filed alphabetically by title in the service file. A list should be made of all items not received and a follow-up order submitted to the military service branch for the missing materials.

Many manuals and pamphlets identified in the POI or curriculum outline may be used only as military references. These materials are generally irrelevant and should be discarded or returned to the military.

Materials Preparation and Referencing Component

This component has four major activities. These activities include preparation of catalog entries, indexing of materials, packaging of materials, and assembly of catalogs.

Preparation of Catalog Entries

Once a course has been selected for inclusion in the SYSTEM, availability of individual items as well as the total course package should be announced in a catalog.

Catalog entries may be placed on 11" x 17" sheets of paper, printed on both sides, and center-folded to form a four-page three- and two-hole punched catalog entry. Each catalog entry should describe in detail the individual items of printed materials, audiovisual materials, and equipment contained within each course. The description should also include information regarding the training and reading levels; prerequisite training or experience; and subjects covered in the course.

All items in the total curriculum package should be described. Information on printed materials should include page counts and price, and audiovisual materials information should include color status, number of slides, number of transparencies, "run" time, and prices. Requests for those items in the curriculum package not available from the SYSTEM should be referred to the source. Pictures of curriculum materials should be incorporated into the descriptive information to help communicate the nature of the materials to the reader.

Indexing of Materials

Assignment of codes, clusters, and service areas should be made by the Materials Preparation and Referencing component. As catalog entries are prepared, a U.S. Office of Education (USOE) cluster, an occupational service area, a USOE occupational service area code, and a *Dictionary of Occupational Titles* (DOT) code should be assigned to each course. These codes are then added to the title index cards and the catalog entry.

The title cards pertaining to the course to be announced in the catalog should be pulled from the file and an index listings compiled. These include listings by occupational service area, USOE code, DOT code, and alphabetically by course title. It is suggested that the catalog be arranged by the 15 USOE occupational clusters. The compiled index listing should serve as a cross-reference to the catalog of materials.

Packaging of Materials

Project consultants (see Final Report) have recommended that the military course material be slightly modified. After the catalog entry has been written and code and clusters assigned, the package should be modified by removing military-specific information. A page should be inserted explaining to the user why the material was omitted.

After removing the military-specific information, the material should be packaged in such a way as to make it useful for vocational and technical educators. This may include binding the package and inserting instructions on the flow and use of material within the course.

After packaging is completed, materials should be stored in the master storage area awaiting reproduction. It is recommended that storage be in steel filing cabinets that are specifically designed to hold the materials. For example, cassette tapes should be filed in a cassette tape cabinet; films should be stored in a film cabinet, etc.

Assembling Catalogs

Assembling the catalog of materials is the last major function of the Materials Preparation and Reference component. Catalog entries should be in

the final form and pictures and clips should be attached permanently at this time. Index listings and the table of contents should have been camera-ready typed. Assembly of the catalog is a matter of combining all parts of the catalog and numbering the pages.

Catalog should be assembled in two forms: (1) as a total book including all service areas and (2) by separate occupational service area. It is likely that state departments of education and library personnel would wish complete copies of the catalogs, while teachers may only want catalos pertaining to their area of interest.

It may be desirable to subcontract the printing of the materials catalogs because of the photographic and color qualities desired. The catalogs should be printed so that each course is a four-page entry. This would permit the entry to be easily updated or deleted without harming the remainder of the catalog. Also, the individual entry could be used as a promotional device to be sent to persons interested in specific occupational curriculum materials described in that entry. This would enable the SYSTEM to cost-effectively develop descriptive literature of materials available as well as "target" information to broad or specific curriculum area interest groups.

Duplication and Distribution Component

This component has the following five major responsibilities: receiving orders, processing orders and duplicating materials, sending materials, book-keeping, maintaing the master file and the materials inventory.

Receiving Orders

Requests for military curriculum materials may be made to the SYSTEM by letter, purchase order, or telephone call. These requests will be screened by the User Services component and those requesting materials available in the SYSTEM will be forwarded to the Duplication and Distribution component. A form should be developed to receive telephone requests which includes all pertinent information for billing purposes. See Appendix C for an example of such a form.

Processing Orders and Duplicating Materials

When requests are received, the availability of the materials within the SYSTEM is verified. A six-part, pressure-sensitive invoice should be typed for the following purposes: three copies for the purchases, one copy for accounts receivable, one copy for inventory, and one copy for use as a packaging slip. Packaging labels are also typed at this time. An example of such an invoice is shown in Appendix D.

It is recommended that during the first year or two of operation, materials should be reproduced on demand as much as possible. Realizing that this is an

expensive and time consuming process, it may be possible to identify a limited number of courses with high demand potential. When a request is received, rather than duplicating only one copy, consideration should be given to making at least nine additional copies for shelf items. Unavoidable backlogs for materials may occur and customers should be notified of any delay beyond two weeks.

Paper Copy Materials. It is recommended that paper or hard copy be reproduced within the SYSTEM. Materials should be photocopied if the number of copies ordered is less than ten, and an offset press is used for larger quantities.

Audiovisual Materials. Operators of the SYSTEM may want to secure additional information concerning the demand for slides, videotapes, and films before acquiring equipment for duplication. Initially it may be most cost-effective to subcontract this kind of work as long as the turn around time is less than one week. Transparency masters can generally be produced on the offset press.

Referral. Many of the military courses use materials which have been developed by commercial firms. These materials should be clearly identified and the source specified. Civilian vocational and technical educators should be referred to these sources in a letter accompanying the materials acquired from the SYSTEM.

Sending Materials

Materials should be securely packaged and include instructions regarding the use of the materials, as well as referral information. Packages should be less than 50 pounds per box because of the cost of mailing heavy packages and the problems involved with delivery.

United Parcel Service (UPS) should be used whenever possible since it has a delivery guarantee of three days. For areas not covered by UPS, the U.S. Postal Service 4th Class Book Rate should be used. Not more than one day should be allotted for packing and mailing materials after they have been duplicated.

Bookkeeping

A double-entry bookkeeping system should be used to account for incoming and outgoing monies. A rotary fund should be established to allow duplication of materials before payment. When payment is made for orders, the cost of duplication and handling should be returned to this rotating fund. Initially, pricing of materials should be set to recover the cost of duplication and handling.

Maintaining Master Copy File and Inventory

A "master copy" of materials should be kept separate from those materials maintained in the inventory. These original copies would be used as duplication masters and for archival purposes.

An inventory of curriculum materials should be built up over time. Initially, materials should only be duplicated if an order is received. At that time a decision should be made as to whether to print ten or more copies and use the offset press to achieve higher quality and cost-effectiveness in printing. The danger, of course, lies in overestimating the demand and tying up large quantities of money in an inventory which does not move.

User Services Component

The User Services component has six major activities. They are receiving or negotiating orders, providing technical assistance, making referrals to other agencies, developing and distributing promotional literature, distributing catalogs, and assessing user needs and satisfaction.

Receiving or Negotiating Orders

One member of the User Services staff should be assigned to screen all correspondence and requests for materials. There will be three general kinds of requests. One type will ask for specific material contained in the SYSTEM and it should be forwarded to the Duplication and Distribution component for immediate processing. Another type of request will be for materials not specifically listed in the catalogs. In these cases, a letter of clarification should be sent or a telephone call made to determine requestors' needs. If some materials in the SYSTEM can satisfy their needs, the request should be forwarded to the Duplication and Distribution component. The third kind of request is for general information about the products or the SYSTEM. These can generally be answered with form letters and informational packets.

Providing Technical Assistance

Since this SYSTEM will be new and aimed at a wide audience of vocational and technical educators, assistance may be required to alert individuals to new products or services available to them. Technical assistance may be offered in the form of searches, workshops, seminars, or consultation services.

When a requestor is uncertain about the availability of materials in his/her subject area, a manual search could be done. Manual search service to requestors can easily be accomplished by using the subject card index and the indexes appearing in the SYSTEM's catalog. The requestor would only have to provide the key words on the subject area of interest.

Training workshops or seminars would be another form of technical assistance in which persons unfamiliar with the SYSTEM would be given aid on the utilization of materials from the SYSTEM. Testimonials on the advantages and disadvantages of the material could be given by previous users of military materials. This might persuade users to request and use many materials they previously would not have ordered.

Consultation services might be needed by various school departments in developing their curriculum. SYSTEM representatives should be available to suggest ways that the military materials could be used to supplement or replace existing curriculum. Consultation may be in the form of telephone calls, workshops, on-site visits, or evaluation service. Charges for these services should be kept to a minimum.

Referral to Other Agencies

In order for the SYSTEM to function effectively and to avoid duplication of activities by existing information systems, it will be necessary for a number of formal operating relationships to be established between the SYSTEM and other agencies. Prominent among those agencies with which working arrangements may need to be pursued include the Aerospace Education Foundation (AEF), the U.S. Naval Institute (NI), the National Audiovisual Center (NAC), the National Technical Information Service (NTIS), the Government Printing Office (GPO), Abstracts of Research and Instructional Materials in Vocational and Technical Education (AIM/ARM), and the Curriculum Coordination Centers (CCCs).

Aerospace Education Foundation and the Naval Institute. The work done by the Aerospace Education Foundation (AEF) and the U.S. Naval Institute (NI) in obtaining and modifying selected Air Force and Navy courses represents a substantial resource to the civilian community. It is suggested that the material available from AEF and NI be announced in the SYSTEM's catalogs. This would allow civilian educators to learn of the slightly modified materials available from these agencies. This arrangement might allow long-term assessment of the differences in demand between modified and unmodified military curriculum materials. Subsequent surveys of teachers who request either or both types of materials could be conducted to determine the relative cost-effectiveness of the various types of materials available. In short, this arrangement would answer the question: "What is the difference in utility to a civilian teacher between military materials which have been modified versus those which have not been modified?" Also, this arrangement would allow AEF and NI to be in direct contact with the nation's vocational teachers, thus making the products of their work more widely known.

National Audiovisual Center and Military Film Libraries. Based upon information gathered by project staff during visits to military installations in 1975-76, it is believed that making military training films available through the SYSTEM is not cost-effective. There are two major factors which lead to this conclusion. First, reproduction of films, compared to other audiovisual materials, is very expensive. Second, the National Audiovisual Center is already established as the civilian agency for the distribution of

government-produced films to the general public. Making military films available through the SYSTEM, putting the cost question aside, would be a duplication of effort. In addition to the National Audiovisual Center capability, each branch of the military service has one or more film libraries which make selected films available to the public on a loan basis. Therefore, military training films in support of courses within the SYSTEM should be cited as available from the National Audiovisual Center or the specific military branch involved. With this arrangement, teachers could learn of the availability of military films through the SYSTEM's catalogs, but would be referred to the National Audiovisual Center or the military branch to obtain the film.

National Technical Information Service and the Superintendent of Documents. The National Technical Information Service (NTIS) and the Superintendent of Documents (GPO) have made available a number of military curriculum materials. Examples of these materials are field manuals, technical manuals, and rate training manuals. In those cases where NTIS and GPO have documents which are identical to documents comprising parts of the courses in the SYSTEM, users should simply be referred to these agencies.

AIM/ARM. Occasionally AIM/ARM contains citations (e.g., Navy Rate Training Manual) of military documents which comprise part of a military course. This index might be used in addition to the SYSTEM's catalogs to announce the availability of military curriculum materials. Since a substantial number of educators use the AIM/ARM information system, it would represent an excellent vehicle for making specific military materials known to teachers. Perhaps several pages could be purchased in each issue of AIM/ARM to describe the SYSTEM and announce the materials which are available.

Curriculum Coordination Centers. The Curriculum Coordination Centers and the national curriculum network have great potential as dissemination agencies in announcing military curriculum materials. During a meeting with the six Curriculum Coordination Center directors, they were very positive toward the materials, expressed willingness to announce the materials after they had an opportunity to view them firsthand, and were generally receptive to involvement in material modification and objective verification. One set of materials might be shared with each of the six centers as a resource for additional curriculum development.

Developing and Distributing Promotional Literature

One kind of promotional material developed by the SYSTEM is the materials catalog. Because each entry is self-contained and may be removed from the catalog without affecting the remaining sections, these entries can be used as promotional materials aimed at specific target audiences using the SYSTEM. Another promotional product would be a general descriptive brochure about SYSTEM capacity and capabilities. The brochure may be produced on 8½" x 11" paper and folded twice to allow insertion in business envelopes.

Other forms of promotional activities include speaking and exhibiting at professional association conferences, such as the American Vocational Association,

the American Industrial Arts Association, the American Association of School Administrators, and the American Association of Junior Colleges; and preparing journal articles.

Distributing Catalogs

The User Services component should work closely with the Materials Preparation and Referencing component in the production of catalogs. User Services should develop and maintain a current computerized mailing list for rapid recall of names of educators who have ordered materials and to identify educators in various educational and occupational categories to receive catalogs and promotional literature. The mailing list should provide an indication of how many targeted and complete catalogs should be printed, as well as be transferable to mailing labels.

Assessing User Needs and Satisfaction

User needs and satisfaction should constantly be assessed by the SYSTEM. Some ways to assess user needs and satisfaction are by return postcards; questionnaires; complaints made by the user; and feedback from professional meetings, letters, and telephone.

A follow-up or feedback card should be enclosed with all materials sent out by the SYSTEM. This follow-up card should include questions about turnaround time, price, availability information, and quality, with a chance for users to rate all items as being excellent, good, satisfactory, fair, or poor. By return postcards, the User Services component would be able to estimate the impact of the materials upon vocational and technical educators and their satisfaction with the products and services provided.

During the pilot testing of the SYSTEM, a questionnaire may be developed for evaluating user needs. This instrument should have items addressing the necessity for modification of materials, the completeness of material descriptions, suggestions for revising the catalog, and curriculum materials needed by vocational and technical educators which are not presently offered by the SYSTEM. Survey findings should indicate where changes can be made in the catalog and priority areas for collection of materials to make the SYSTEM more effective.

Complaints by customers should be considered in evaluation of the SYSTEM's products and services. When there are many complaints about aspects of catalog construction or the materials collection, changes should be considered. However, change should not necessarily take place on the basis of one complaint.

An important area in evaluation is the request for materials that the SYSTEM does not provide. These requests may indicate emerging occupations in the civilian sector. If possible, military materials in the emerging occupations should be immediately acquired and made available through the SYSTEM.

Verbal feedback by telephone, from professional meetings, or during consultation should be recorded and play a major role in the evaluation of the SYSTEM. Forms may be developed to record verbal interaction and be analyzed by the User Services staff.

CHAPTER III

IMPLEMENTATION OF THE SYSTEM

As is the case in designing, developing, and implementing any information system, it will be difficult to predict the actual demand for military-developed curriculum materials. Operators of the SYSTEM cannot expect civilian vocational and technical educators to acquire and use these materials simply because they are made available. Educators need to be made aware of military curriculum materials and learn how such materials can be useful to them.

The survey of schools using military materials conducted within this project[5] provided useful insights into effective approaches for designing the SYSTEM. However, the current small-scale use of military-developed materials in civilian vocational and technical programs, coupled with the fact that a majority of the teachers using military materials have military backgrounds, makes it impossible with present knowledge to accurately predict the current and potential demand by vocational and technical teachers for military curriculum materials.

Questions which need to be pursued in the early development and operation phases of the SYSTEM include:

1. To what degree are civilian teachers aware of military curriculum materials?

2. What perception do civilian vocational and technical teachers have of military-developed curriculum materials (e.g., usefulness, adaptability, format, and currentness)?

3. What teacher satisfactions or dissatisfactions are associated with (a) use of unmodified military curriculum materials, and (b) use of materials which have been modified by other agencies?

4. What kinds of modification would be made in military curriculum materials by teachers?

5. What will be the demand for military-developed curriculum materials by civilian vocational and technical educators as a result of dissemination activities aimed at creating awareness, interest, and trial of military curriculum materials?

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[5] Earnestine A. Dozier et al. *Utilization of Military-Developed Curriculum Materials in Civilian Vocational Programs: A School Survey.* Columbus, Ohio: The Center for Vocational Education, The Ohio State University, 1976.

6. Which dissemination strategies are most effective in making educators aware of the availability of military curriculum materials and in assisting them in utilizing the materials?

These kinds of questions strongly suggest the need for (a) deliberate field study of a variety of military curriculum materials to determine their acceptability by civilian vocational and technical educators and (b) testing several dissemination strategies to determine the most effective means of making educators aware of the usefulness of these materials.

Recommendation for SYSTEM Implementation

To facilitate an orderly development and implementation of the SYSTEM, it is recommended that a minimum of five years of operation be allowed to give the SYSTEM a fair development and assessment period. There is a need to develop awareness and understanding of military-developed curriculum materials among civilian vocational and technical educators and a need to acquire firsthand information on the acceptability of the material as well as the formats of material desired. It is further projected that the SYSTEM will require a differentiated staff of six to eight members and require annual funding of $225,000 to $275,000 at least through the first three years. An additional one-time investment of $50,000 should be appropriated for a revolving fund to accommodate the development of a materials inventory. It will be necessary to subsidize the SYSTEM during the first five years to provide for the extensive acquisition, processing, and dissemination activities required in implementation. Possibilities of the SYSTEM's becoming self-supporting should be explored after the third year of operation.

This recommendation is based upon the advice of the directors of the Curriculum Coordination Centers, the findings of the review of information systems, the findings of the school survey, project staff experiences in collecting and reviewing military curriculum materials, and the suggestions of others experienced in information systems. The following sections will address specific implementation strategies for making materials available, and for achieving user awareness and utilization. Finally, an implementation schedule is presented which should be used in implementing the SYSTEM.

Strategy for Making Materials Available

Although field trials have been conducted which establish the adaptability and effectiveness of military-developed curriculum materials in civilian vocational and technical education programs, there is little information available concerning the general acceptability of these materials by civilian educators. Additional study needs to be conducted to determine the acceptability of the materials in their original format and in a modified format. The questions raised in the introductory remarks of this chapter need to be addressed and data gathered during the first three years of the SYSTEM operation. These data

will provide input for materials preparation and packaging procedures and dissemination strategies. Selected vocational and technical educators must be asked to adopt or adapt military curriculum materials in their original form and modified form such as that provided by the Aerospace Education Foundation and provide feedback to the SYSTEM staff on the degree of their acceptability. This information will then be used to determine the kinds of materials to be made available (printed, audiovisual, or hardware), the amount of modification required if any, and the curriculum priority areas.

Initially, however, military curriculum materials should be made available through the SYSTEM without modification in order to minimize costs and expedite filling of civilian requests. Not only would this reduce the "in-out processing time," but it would also be consistent with the findings in the school survey that most vocational and technical educators make their own modifications in the material. Although modification would be desirable prior to dissemination of the curriculum materials to teachers, such a process applied to the large volume of military curriculum materials would be too costly in terms of money, personnel, and time.

Another reason for disseminating military curriculum materials without extensive modification is the need to satisfy the immediate curriculum materials needs of vocational and technical educators. During the course of this project, numerous requests were received directly from vocational and technical educators stating both their need and desire for various types of military-developed curriculum materials. The need to disseminate materials which have been acquired through substantial federal investment is too urgent to wait for desirable but unessential modifications.

During the first two years of the SYSTEM's operation, refinement of the collection should focus on military-developed curriculum materials which represent (1) basic courses, (2) instructional areas which have large civilian student enrollment, and (3) materials which are self-paced with behavioral objectives. Pending positive field study results, the collection of military curriculum materials would subsequently be expanded to other areas.

A distinction needs to be made between the types of material to be acquired in the first year of SYSTEM operation as compared to the second year. The first year of the field study would consist primarily of systematic tryouts of <u>printed</u> military curriculum materials to answer some of the basic questions mentioned earlier regarding the general acceptance of the material by the average vocational teacher. A secondary level of effort would be given during this first year to the acquisition of audiovisual materials (slides, transparencies, filmstrips, videotapes, and films), with this effort being limited to those military courses for which audiovisual materials would be easily available based upon contacts made with military installations during 1975-76. The second year would, again pending positive field study results, be devoted to obtaining comprehensive collections of audiovisual materials in support of the printed course materials. By the end of the second year the printed materials collection should be nearly complete and would only require routine updating.

To facilitate systematic acquisition of military-developed curriculum materials, it is suggested that:

1. An agreement with the Department of Defense be developed or congressional legislation be passed which would instruct military installations to automatically send a copy of each new or revised item of curriculum material to the SYSTEM for review and possible input to the collection. This regulation would be limited to a predetermined list of civilian-related military courses and would include all printed and audiovisual materials for new civilian-related courses.

2. The feasibility be explored of obtaining multiple copies of high civilian demand materials from military printing facilities at the time of production. The SYSTEM would reimburse the military agencies for the cost of materials.

Implementation of these recommendations would provide for a systematic acquisition effort during the first two years, and generation of reliable user satisfaction information upon which to base long-range decisions regarding military curriculum materials formatting and packaging.

Strategy for Achieving User Awareness and Utilization

The first three years of the SYSTEM operation should be heavily devoted to activities for familiarizing vocational and technical teachers with military-developed curriculum materials. This familiarization would take place through field study activities, as well as by catalogs distributed directly to teachers through state departments of education. Suggested activities are:

1. Develop catalogs which list and describe curriculum material by occupational area, such as the 15 U.S. Office of Education clusters. Preparation of catalogs by cluster would allow targeted dissemination to teachers within those specialty areas to enhance use of the catalogs and to reduce the cost of producing sections of catalogs which would be irrelevant. For example, a teacher of automotive mechanics probably would not want to review catalog entries related to food preparation.

2. Select five states at random within which these "cluster" catalogs would be disseminated directly to a stratified random sample of 200 teachers per state. In five other randomly selected states the SYSTEM would disseminate "cluster" catalogs to teachers through curriculum coordinators and state supervisors within the state departments of education. Data should be gathered at twelve and twenty-four month intervals to determine the number and type of requests for military curriculum materials from these 10 test states, using the two methods of dissemination as the major independent variable.

3. Provide familiarization workshops and exhibits at professional meetings in selected states other than the 10 in the above recommendation

to further make vocational and technical educators aware of the potential usefulness of military curriculum materials. Various structures for workshops should also be tested, such as (a) training leaders in regions of the country who in turn would train others within states of the region, (b) workshops for teachers as part of state-level conferences, and (c) meetings of vocational and technical teachers within large city school districts. By conducting these varied kinds of workshops in proximity in time to one another, it would be feasible and desirable to collect data at twelve and twenty-four month intervals to compare the relative effectiveness of the workshops in producing requests from teachers for materials from the SYSTEM. It would be desirable during field studies to set up exhibits at professional meetings in states other than those in which the various workshop treatments would be compared.

4. Employ more general methods of familiarizing teachers with the SYSTEM and its materials across the 50 states apart from the field study conditions. Since these methods should presumably operate relatively equally across all 50 states, these general approaches should not interfere with the differential comparisons being made within the recommended field study. These general methods might include (a) announcement of the SYSTEM catalogs in the *American Vocational Journal*, and other journals, newsletters, and professional publications; and (b) articles describing the SYSTEM in selected professional literature.

Implementation of these activities should provide sufficient information from varied sources to assist in determining which strategy or strategies are most effective in achieving user awareness and utilization of military-developed curriculum materials.

Implementation Schedule

The primary purposes of implementing the SYSTEM over a five-year period then are to: (a) examine issues related to teacher acceptance of and satisfaction with military-developed curriculum materials; and (b) to assess alternative dissemination and utilization practices to create teacher awareness and knowledge regarding potential usefulness of military-developed curriculum materials. The activities and schedule shown on the Gantt chart in Figure 9 depict the recommended SYSTEM activities over a five-year period. Figure 10 provides some understanding of the level of activity, primarily in the form of personnel, by showing the cost percentage of each component in relation to the total SYSTEM's yearly cost. This figure indicates the relative emphasis to be given the components and the activities shown on the chart in Figure 9. The following narrative further describes and clarifies the two charts and the activities within each component.

Acquisition and Selection

Acquisition and selection of military-developed curriculum materials will be a continuing process during the lifetime of the SYSTEM. During the first

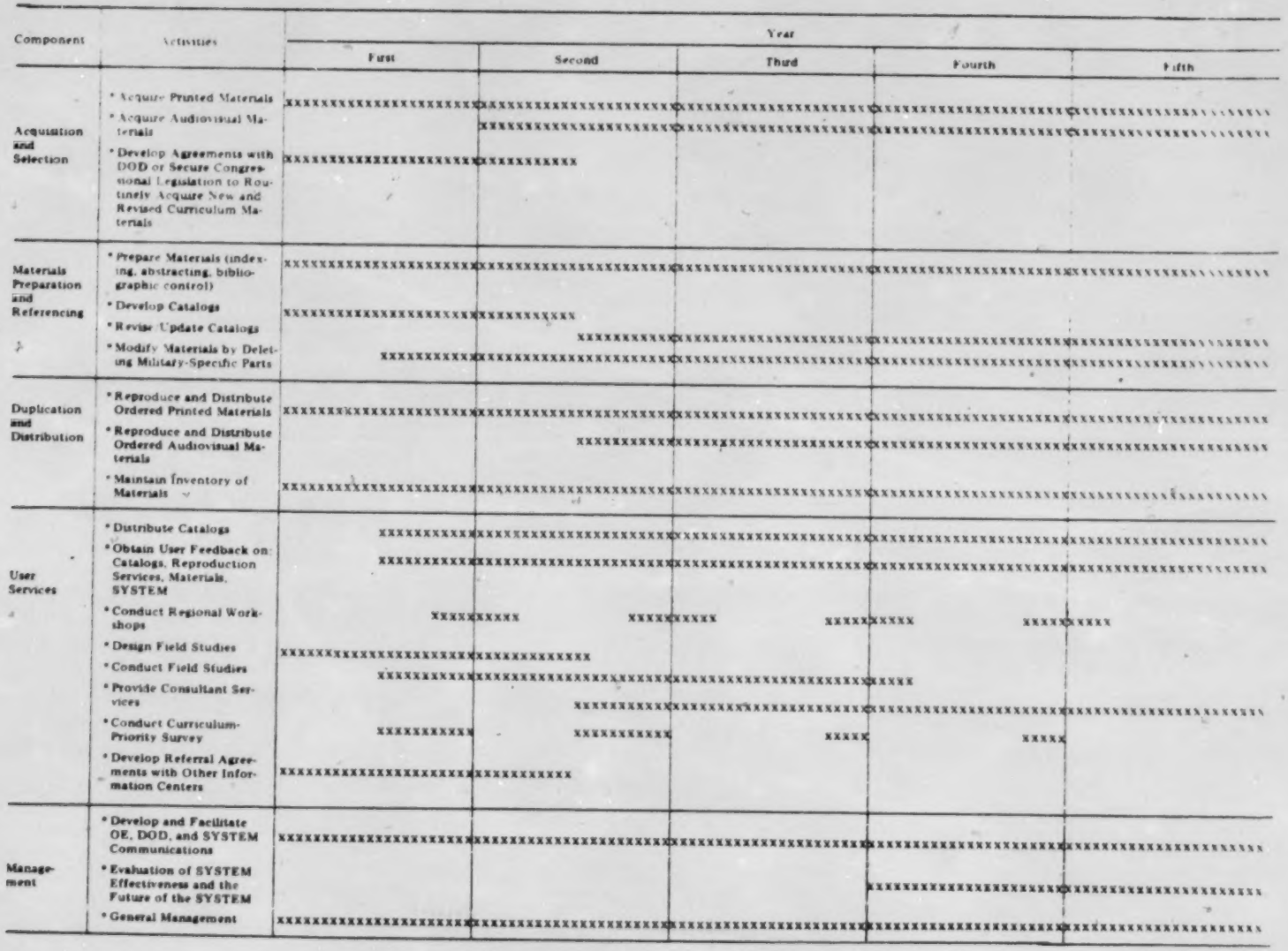
Component
Activities
Year
First
Second
Third
Fourth
Fifth
Acquisition and Selection
* Acquire Printed Materials
* Acquire Audiovisual Materials
* Develop Agreements with DOD or Secure Congressional Legislation to Routinely Acquire New and Revised Curriculum Materials
Materials Preparation and Referencing
* Prepare Materials (indexing, abstracting, bibliographic control)
* Develop Catalogs
* Revise/Update Catalogs
* Modify Materials by Deleting Military-Specific Parts
Duplication and Distribution
* Reproduce and Distribute Ordered Printed Materials
* Reproduce and Distribute Ordered Audiovisual Materials
* Maintain Inventory of Materials
User Services
* Distribute Catalogs
* Obtain User Feedback on: Catalogs, Reproduction Services, Materials, SYSTEM
* Conduct Regional Workshops
* Design Field Studies
* Conduct Field Studies
* Provide Consultant Services
* Conduct Curriculum-Priority Survey
* Develop Referral Agreements with Other Information Centers
Management
* Develop and Facilitate OE, DOD, and SYSTEM Communications
* Evaluation of SYSTEM Effectiveness and the Future of the SYSTEM
* General Management

Figure 9. SYSTEM Five-Year Plan of Activities

SYSTEM COMPONENT	Year				
	First	Second	Third	Fourth	Fifth
Acquisition and Selection	8%	8%	8%	9%	10%
Materials Preparation and Referencing	43%	43%	26%	28%	32%
Duplication and Distribution	6%	6%	15%	22%	25%
User Services	35%	35%	42%	31%	22%
System Management	8%	8%	9%	10%	11%
TOTALS	100%	100%	100%	100%	100%

*These figures reflect 10% per year inflationary costs.

Figure 10. Five-Year Component Cost Relationships

year, missing items from courses secured during the conceptualization state (1975-76) should be acquired. In addition, courses from each Service which relate to second-level curriculum priorities should be identified and acquired. Acquisition of audiovisual material should proceed with caution during the first and second years until the extent of user demand and duplication costs can be accurately assessed. Acquisition and selection would then become a maintenance activity beginning in the third year of operation. Agreements should be reached with the Department of Defense or congressional legislation should be sought during the first year and a half to specify the means of routinely receiving copies of all new or revised unclassified civilian-related curriculum materials from the military because direct monitoring and acquisition by the SYSTEM is very costly. The U.S. Office of Education perhaps should take the initiative in getting these regulations established.

Materials Preparation and Referencing

Preparation of military-developed curriculum materials should be an ongoing activity, with an intensity reflecting the amount of new or revised material acquired or the degree of modification required by vocational and technical educators. After the third year, the level of activity should decrease and remain fairly constant thereafter. The preparation of the first catalog of materials will be time consuming because of the large number of materials to be described initially and the development of alternative formats for pilot testing. Catalog entries will be individualized and ring-bound so that new courses can be added or old descriptions revised without disturbing the remaining entries. The supply of catalogs will need to be replenished as the stock becomes depleted during the course of SYSTEM operation.

Duplication and Distribution

This component will duplicate printed materials as soon as they have been processed and prepared for use by civilian vocational and technical educators. The activity in this component during the first year will not be very great, but will increase up through the fifth year as more vocational and technical educators become aware of military-developed curriculum materials and place orders. Arrangements for reproducing audiovisual material will be made as the materials are acquired.

User Services

The User Services component, as mentioned previously, will serve as the nerve center of the SYSTEM. It is the feedback linkage with the consumers of the SYSTEM's products and services. Distribution of catalogs and assessment of user needs and satisfaction with products and services are ongoing processes throughout the life of the SYSTEM. Formal curriculum priorities surveys should be an annual activity and user workshops may correspond to regularly scheduled professional meetings or summer vocational teacher conferences. The field study should be conducted during the first three to four years of the SYSTEM operation

to investigate, in greater depth than is possible with informal feedback, user acceptance of military-developed curriculum material, their requirements concerning material modification, and the types of curriculum material preferred.

Management

The SYSTEM director is responsible for the general coordination and supervision of all internal activities. In addition, the director is responsible for facilitating development of agreements and working arrangements between the SYSTEM and the military services and among other information systems.

Summary

In summary, SYSTEM implementation should be methodical, with products and services based upon the needs of vocational and technical educators. Dissemination and diffusion activities should rely heavily upon existing communication networks and linkages within states and regions. Maximum utilization of these networks may require state by state investigation of their dissemination patterns. Materials should be made available with caution, carefully studying the acceptance and use of each course and making necessary adjustments in the SYSTEM or its products to meet existing user needs.

CHAPTER IV

SYSTEM ALTERNATIVES

Although an optimum or most desirable SYSTEM model has been presented and recommended for implementation in Chapters I - III, it may be necessary to depart from these recommendations for budgetary or other reasons. The alternatives to the recommended SYSTEM design and implementation plan consist of two approaches: increasing or reducing the scope of work. These alternatives permit very little change in the procedures, inputs, or outputs in terms of their structure, because the four components are essential if the SYSTEM is to function at any level. The alternatives merely reflect magnitude or level of effort. Figure 11 shows in chart form how the alternatives in the increased and decreased scopes of work compare to the recommended level of SYSTEM operation. The following discussion describes these options in greater detail and addresses the potential consequences of choosing a particular option or combination of options.

Increased Scope of Work

One group of alternatives to the SYSTEM relate to increasing the scope of work. An accelerated acquisition and processing program might be employed, with greater emphasis on acquisition of audiovisual materials, especially films. More technical assistance could be provided without cost to vocational and technical educators by SYSTEM staff or by trained field representatives (members of the state department staff, curriculum laboratories, research coordinating units, etc.). On-site or remote consultation would be provided to teachers, giving them specific help and direction for adapting military curriculum materials.

The field study activity would be expanded to include more types of schools, occupational areas, and levels of instruction than in the recommended SYSTEM. The printing and handling of materials could be subsidized to further reduce the cost of materials to the user and hopefully encourage greater utilization. Additional publicity in the form of brochures, journal announcements, and exhibits at professional meetings might increase the awareness of and interest in military curriculum materials on the part of vocational and technical educators.

These supplementary activities can probably be conducted with the services of an additional professional and technical staff member. Cost for this increased scope of work could be approximately $75,000 above the recommended operating level. This added expense can be attributed primarily to staff salary and benefits, printing and distribution of promotional material, and staff travel.

Activity	Increased Scope of Work	Recommended Activity	Decreased Scope of Work
Number of Courses Acquired and Processed	150 resident 350 correspondence	100 resident courses 350 correspondence courses	50 resident 100 correspondence
Availability of Audiovisual Materials	Films, slides, transparencies, audio and videotapes for the above courses	Slides, transparencies, audio and videotapes for the above courses, films excluded	None
Distribution of Brochures and Catalogs	75,000 copies (teachers, LEAs, SEAs, professional associations)	50,000 copies (LEAs, SEAs, professional associations)	25,000 copies (SEAs and national associations)
Technical Assistance	Provide consultation to local schools and and districts, plus that in "Recommended Activities"	State and regional workshops	Provide service if financed by an outside agency
Field Study	Increase the sample size to allow study of users in different types of schools, occupational areas, and levels of instruction	Determine user acceptance of material on a random sample of vocational and technical educators	Assess acceptability of materials through follow-up cards, random phone calls, and incoming letters.
Annual Cost	$325,000	$250,000	$200,000

Figure 11. SYSTEM Activities by Alternative Levels of Effort

An obvious disadvantage of this increased scope of work is the added cost and perhaps a high concentration of activity during the first year or two before the SYSTEM has been completely developed and materials are available. The cost-benefit ratio may not be as high as in the recommended SYSTEM five-year plan. Advantages of this increased activity include: (a) more complete course materials, (b) greater user awareness and interest--which should lead to greater utilization, (c) additional study of users will provide more data upon which to base SYSTEM decisions, and (d) providing materials free of charge or at a minimal cost by subsidizing the printing and handling activities, thus increasing the liklihood of vocational and technical educators securing the materials.

Decreased Scope of Work

The second group of alternatives to the SYSTEM relate to decreasing the SYSTEM scope of work. Minimal service could be provided by making available a smaller number of printed curriculum materials (150 resident and correspondence courses vs. the 450 recommended in the five-year plan). Also no audiovisual material would be available directly from the SYSTEM. Assistance to vocational and technical educators in the form of individual consultation could be reduced or eliminated completely. Only a few presentations and displays describing the SYSTEM would be retained. Pilot testing of catalogs and their dissemination would be eliminated and the SYSTEM would rely heavily upon linking agencies and networks such as the Curriculum Coordination Centers, Research Coordinating Units, and state departments of education to provide the necessary materials awareness.

This reduction of activity would allow perhaps $50,000 to be removed from the $225,000 - $275,000 annual budget, primarily through reduction in professional and technical staff. The advantage of reducing the level of activity of course is a corresponding reduction in overall cost. It should be noted that this reduction in activity has come primarily from the materials processing and user services areas. Reduction in processing cost means that fewer materials are acquired and prepared and that the more expensive to process audiovidual materials will not be made available. Curtailment of activity in the user services area means less information on user needs on which to base SYSTEM operating decisions and less user awareness which in turn is reflected in less utlization of materials.

These suggested alternatives all preserve the integrity of the SYSTEM, the major consideration being the direct interaction with vocational and technical educators. Unfortunately, dissemination and diffusion activities, like evaluation, are usually the first to be considered for reduction or elimination. This temptation should be resisted as much as possible, for it does little good to make military curriculum materials available if vocational and technical educators are not aware of their existence or do not know how to adopt or adapt them to their programs.

There are numerous alternatives that exist within the recommended five-year SYSTEM; for example, procedures for acquiring material, packaging options,

various means for making audiovisuals available, purchasing duplication equipment vs. subcontracting, or catalog formatting. Although the SYSTEM designers have made several suggestions in these areas earlier in this document, it is their opinion that these represent operational or procedural alternatives and cannot be looked upon as substantive alternatives as far as delivery of the curriculum materials is concerned. These questions need to be addressed by the operator of the SYSTEM and the operational alternatives chosen will depend upon their local capabilities, capacity, and linkages.

Potential of an Expanded SYSTEM

The SYSTEM has potential beyond simply making military-developed curriculum materials available to civilian vocational and technical educators in the United States. There is potential for increased SYSTEM capacity as well as service to a larger group of educators. Some of these increased services are:

1. Expanding the scope of curriculum materials collection to include those of other governmental agencies (e.g., Peace Corps, National Aeronautics and Space Administration, Department of Labor).

2. Including military curriculum materials from other countries in the collection (e.g., Britain, Australia, New Zealand).

3. Making the materials in the collection available to the overseas Military Dependent Schools.

4. Serving as a centralized repository where military-developed curriculum materials are available for review by military and civilian educators. This could be a curriculum development resource which is available nowhere else.

5. Serving as a national referral agency of military and civilian curriculum development activities.

The primary objective of these suggestions is to stimulate the dialog between the civilian and military educational communities.

APPENDIX A

Military Contacts

APPENDIX A

Army

Department of Defense (Washington, DC)

Department of the Army (Washington, DC)

Training and Doctrine Command (Ft. Monroe)

Training Sites

Air Force

Department of Defense (Washington, DC)

Department of the Air Force (Washington, DC)

Air Training Command (Randolph AFB)

Training Sites

Marine Corps

Department of Defense (Washington, DC)

Marine Corps Headquarters (Washington, DC)

Training Sites

Navy

Department of Defense (Washington, DC)

Department of the Navy (Washington, DC)

Chief of Naval Education and Training (Pensacola)

Chief of Naval Technical Training (Memphis)

Training Sites

Coast Guard

Chief, Training and Education (Department of Transportation, Washington, DC)

Training Sites

APPENDIX B

Military Technical Training Codes

AIR FORCE NUMBERING SYSTEM

A typical Air Force course number is:

3AZR47350-2 Automotive AC Electrical Systems

The numbers and letters will be considered individually or as a group in explaining how to arrive at the proper code for the course:

3 This digit represents the type of military-technical training program. In this case, a number "3" means "ATC Resident Technical Training."

A This letter stands for the type of student taking the course. In this case, the "A" stands for "USAF Active Duty Airman."

Z This letter stands for the training program objective. In this case, the "Z" means that this course is supplemental to other training on the same subject.

R This letter stands for the type of training activity (or organization) providing the training. In this case, the "R" means that the course is taught at an ATC Technical Training Center.

473 These three digits stand for the Air Force career field. In this case, the numbers stand for Vehicle Maintenance.

5 This digit stands for the skill level of each course. The number 5 stands for an intermediate course in Vehicle Maintenance.

0 This digit stands for the number of courses taught on the same or related subject. In this case, the "0" stands for the fact that there is one course in this subject.

For additional information, please refer to:

USAF Formal Schools Catalog Course Announcements. AFM 50-5, Volume II. Washington, D.C.: Department of the Air Force, September 1, 1974.

ARMY NUMBERING SYSTEM

A typical Army course number is:

610-63G20 Fuel and Electrical Systems Repair Course

This code will be broken down into individuals or groups to explain the number.

610 This first three-digit group indicates the DOD group code (DOD--Department of Defense). In this case, "610" indicates Automotive, General. The code contains the Occupational Area (6), the Occupational Group (61), and the Occupational Sub-group (610).

63G This group indicates the Military Occupational Specialty (MOS) of the Army. The "63G" stands for Fuel and Electrical Systems Repair and "63" represents the Career Management Field.

20 This stands for the level of instruction. In this case, the "20" means that it is a basic course.

For additional information, please refer to:

U.S. Army Formal Schools Catalog. Department of the Army Pamphlet, No. 351-4. Washington, D.C.: Department of the Army, March 1, 1975.

Army Occupational Handbook. Washington, D.C.: Department of the Army, October 1974.

COAST GUARD NUMBERING SYSTEM

The Coast Guard courses are not numbered. However, because all other military branches use a numbering system, one was adopted for the Coast Guard. An example is given below:

CG 602 Aviation Electronics Technician, Class A

This number has been assigned by using the *Department of Defense Occupational Conversion Table, Enlisted*. "CG" stands for the Coast Guard and "602" stands for the Occupational Area, Group, and Sub-group as defined by the Department of Defense.

This numbering system enables the Coast Guard materials to be cataloged in the same way as the other military branches.

For additional information, please refer to:

Personnel Manual. Washington, D.C.: United States Coast Guard, Department of Transportation. Appendix 3-1, 3-2, and 3-3.

MARINE CORPS NUMBERING SYSTEM

The Marine Corps has two types of numbering systems. First, the Marine Corps has cataloged all courses to comply with the Department of Defense (DOD) numbering system which gives an Occupational Area, Group, and Sub-group. Second, the Marine Corps also has a numbering system which indicates the Military Occupational Specialty (MOS) for each course. In order to have more conformity in the numbering system, the DOD numbering system is being used for each course. For example:

MC 030 Engineer Operations Chief Course

"MC" stands for Marine Corps and in this way is separated from the Coast Guard numbering system by the lettered prefix.

For additional information, please refer to:

Marine Corps Formal Schools Catalog. Washington, D.C.: Headquarters, United States Marine Corps, Department of the Navy, April 17, 1974.

NAVY NUMBERING SYSTEM

A typical Navy course number is:

A-700-0011 Introduction to Welding

This code will be broken down into individual letters and numbers or groups to explain the number code.

A — This letter indicates the Command that developed the course. In this case, the course was developed by the Technical Training Command.

700 — This three-digit code represents the DOD skill designator code. The code is made up of the Occupational Area (7), the Occupational Group (70), and the Occupational Sub-group (700).

0011 — This four-digit code represents the Navy's control system. It has no relation to specialty or occupational area.

For additional information, please refer to:

Catalog of Navy Training Courses (CANTRAC). Pensacola, Florida: Naval Education and Training Command, Department of the Navy, 1974-1975.

APPENDIX C

Example Telephone Order Memorandum

PUBLICATIONS UNIT
TELEPHONE MEMO

A.

Call in ☐
Call out ☐

_____ *Date* _____ *Person Contacted*

_____ *Time* _____ *Phone Number*

B.

Order Placed ☐
Order Cancelled ☐
Order Traced ☐
Price Quoted ☐
Product Discussed ☐

How learned about CVE Products:

Promotional Material ☐ _____ *Reference Number*
Exhibit or Display ☐ _____ *Location*
CVE Staff Member ☐ _____ *Person's Name*
Other (Specify) ☐ _____

C.

Quantity	Series No.	Title	Unit Price

D.

_____ *Purchase Order No.* _____ *Authorizing Unit* _____ *Terms*

E.

BILLING ADDRESS

Name_____
Agency_____
_____
Street_____
City_____
State_____ Zip_____

SHIPPING ADDRESS

Name_____
Agency_____
_____
Street_____
City_____
State_____ Zip_____

F. HANDLING INSTRUCTIONS

Routine Order ☐
Rush Order ☐
Date Materials Required_____
Special Delivery ☐
United Parcel Serv. ☐
Air Freight ☐
Insure Value_____
Return Receipt ☐

G. REMARKS

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APPENDIX D

Example of Invoice

INVOICE

DATE:

BILLED TO

SHIPPED TO

DATE SHIPPED	TERMS	SHIPPED VIA	YOUR ORDER NO.
	Cash upon Receipt of Invoice	4th Class Book Rate	

QUANTITY	DESCRIPTION	UNIT COST	TOTAL COST
	NO DISCOUNTS ALLOWED		

Make checks payable to:
Please mail remittance and a copy of this invoice to:

70

Amount Due	
Amount Received	
Balance Due	

CUSTOMER COPY

APPENDIX F

Slide Presentation Script

MILITARY CURRICULUM MATERIALS
UTILIZATION IN VOCATIONAL EDUCATION

SLIDE	AUDIO
1. Start and Focus.	(Start Tape)
2. Title: Military Curriculum materials utilization in Vocational Education.	Music up
3. Title: This project is supported by the Curriculum Development Branch, Division of Research and Demonstration, Bureau of Occupational and Adult Education of the U.S. Office of Education.	Music out
4. Drawing of a Jet Airliner, Industrial Laser, Nuclear power plant and Freeze-Dried food products.	Military research and development has been a major contributor to the technological advances in our society. Research by or for the military has contributed much to commercial jet aviation and laser technology. From Nuclear Energy to freeze-dried convenience foods, our defense establishment is an important contributor to our technological advancement./
5. Drawing of Military personnel; Auto mechanic, Aircraft mechanic, Food service and Electronic repair.	One military resource which is increasing in importance in the civilian sector is the military's highly developed technical training programs and curriculum materials./
6. Drawing of civilian applications of slide #5.	These military materials have the respect of both civilian educators-who use the programs when they are available and employers-who are willing to hire qualified military trained workers./
7. Photograph of military curriculum materials.	These situations have evolved along with improvement in the quality of the military's vocational and technical education materials./
8. Title: Task Analysis	Military curricula are current, well-referenced and fully tested, and are systematically updated and evaluated./
9. Split screen drawing of military and civilian personnel around table discussing curriculum materials displayed on the table; close up of curriculum material, example-auto mechanics.	A comprehensive system to make military educational resources available to fill the current needs of civilain vocational education programs would greatly extend the value of these resources./

SLIDE	AUDIO
10. Title: Aerospace Education Foundation, Northwest Educational Lab, Virginia Polytechnic Institute, Utah State Department of Education.	Recent projects sponsored by the U.S. Office of Education have demonstrated the quality of military educational curricula and the potential for satisfying civilian educational needs./
11. Split screen drawing of military electronics technician at work, and a civilian electronics technician at work.	Field tests have supported the practicality of adapting selected military courses to civilian educational programs./
12. Drawing of a civilian laser technician at work.	Areas of great potential are new and emerging occupational fields where civilian educational programs have not been developed./
13. A graphic drawing symbolizing a lack of a system.	However, the problem remains that a system does not exist through which the nation's civilian vocational and technical educators have easy access to military-developed curriculum materials./
14. Photograph of the cover of the final report	The Center for Vocational Education, at the Ohio State University, under a contract with the U.S. Office of Education, proposed a system design which would provide military curriculum materials to civilian vocational and technical educators./
15. Title: 1. Analysis of information systems 2. School Survey 3. Need Survey 4. Curriculum Materials Collection 5. System Design #1. Highlighted	This project included an analysis of existing educational information systems to determine whether any could be adapted in part or in total./
16. Title: AIM/ARM AEF CCC NI RCU	Of the thirteen systems reviewed, five were used primarily by vocational and technical institutions and at least three of the five have disseminated military curriculum materials./

SLIDE	AUDIO
17. Graphic drawing symbolizing lack of an overall system.	Although the dissemination of military curriculum materials was not the primary function of any of the systems reviewed, aspects of several of them can be incorporated into the design of the proposed system./
18. Graphic drawing of a system bringing all the pieces together.	A working arrangement with these existing informational systems may be of benefit to both the existing systems and the comprehensive system being proposed. A centralized system of this kind would increase the overall effectiveness of these existing systems./
19. Repeat slide #15 with #2 highlighted.	Also, as a part of this contract a school survey was conducted, involving 175 educators who were using military-developed curriculum materials in 88 secondary and post-secondary, public and private schools./
20. Drawing of a person in the military and the same person as a civilian teaching and a drawing of a vocational school.	Data was collected from survey questionnaires and site interviews. The survey participants generally had military experience, used material in trade and industrial occupational areas and were from post-secondary institutions./
21. A Tri screen drawing of: Army, Navy and Air Force manuals, civilian woman looking at a book with a puzzled look, military person handing aviation curriculum materials to a civilian.	Most of them selected and acquired materials developed primarily by the Air Force, Army and Navy; directly from the military service; and on the basis of low cost and inability to secure similar materials from other agencies. Their greatest problem in obtaining the material was inability to identify the source./
22. Split screen drawing of: A scale with printed materials out weighing A/V materials and a person sitting at a table looking at materials in a library.	They used printed material more than audiovisual or hardware and used the material primarily as a supplement or reference. The major requirements for a system were, that it provide a full description of the materials, supply portions of a course, and fill orders rapidly./

SLIDE	AUDIO
23. Drawing of a crowd of people.	The most important factor in considering the need for an inclusive information system is the multitude of needs of the thousands of its potential users./
24. Repeat slide #15 with #3 highlighted.	To determine the current priorities for curriculum materials a survey was taken of two groups: State curriculum coordinators and deans of instruction of post-secondary institutions./
25. Muti-screen drawing of: An Engine Mechanic, Building Trades, Health, Electronics	According to these educators, the areas of greatest need for additional curriculum include: Building and construction trades, engine mechanics, health, electronics, food service,/
26. Multi-screen drawing of: Food Services Machinist Clerical Heating and Air Conditioning Drafting	machine shop, heating and air conditioning, drafting, and clerical occupations./
27. 1) Aviation 2) Barbering and Cosmetology 3) Communication 4) Curriculum Development 5) Instructional Training 6) Management and Supervision 7) Marketing, Distribution 8) Meteorology, Navigation 9) Office Machine Repair 10) Personnel Administration 11) Photography.	All of these fields as well as a great number of lower priority courses are those in which the military has developed comprehensive vocational curriculum for training personnel./
28. Repeat slide #15 with #4 highlighted.	To gain first-hand knowledge of the materials available form the military, and to determine the degree of access to them,
29. Photograph of this collection of courses.	approximately 100 military resident courses and 350 correspondence courses were collected./
30. Graphic drawing illustrating the matching of military titles with civilian priority areas.	The first step in this process was to match titles of military materials with the titles of priority areas established by civilian educators./

SLIDE	AUDIO
31. Photograph of these collected materials.	Following this match, criteria by which materials were to be collected were established. Appropriate plans of instruction, student and instructor guides and other course materials were requested and obtained from the military service, either by letter or by visits to military training bases./
32. Split screen drawing of a army tank and a military person at a drafting table.	Factors considered in choosing materials included applicability to civilian education, the degree to which it was not reliant on specific military equipment/
33. Split screen drawing of a military person typing and a military machine shop.	and procedures, and the degree to which it was not reliant on commercially prepared materials./
34. Repeat slide #15 with #5 highlighted	During the project, The Center for Vocational Education has developed a comprehensive design for a centralized system to make military curriculum materials available to civilian vocational and technical educators. This proposed system is the result of a detailed analysis of existing information systems, the school survey, the extensive materials collection./
35. Photograph of staff at institution.	visits to both civilian and military educational institutions, and the experience of the project's staff./
36. Graphic drawing, of the parts of the proposed system.	The proposed system incorporates a number of characteristics as integral parts of its design. The system should be centralized to provide educators full access to military curriculum materials./
37. Split screen drawing of a civilian receiving a package of military material and a telegram with, announcement military materials, printed on it.	It should have the capacity to provide materials, as well as announcing their availability./
38. Split screen drawing of materials in a library and a person selecting materials from library.	The curriculum materials should be available individually, although educators should be made aware of the entire scope of materials on a requested subject.

SLIDE	AUDIO
39. Split screen drawing of postman delivering new military materials and a person at a table revising materials.	The system should be self-renewing, with continual updating with new and revised material./
40. Tri-Screen drawing of a person receiving a packet or letter and tow people on the telephone and two people talking face to face.	It should obtain feedback from its users, primarily vocational and technical teachers, to determine their degree of satisfaction with the materials obtained and their additional needs. And it should include input from business and industrial employers on emerging occupations./
41. Repeat Slide #36	Finally, the system should take advantage of the reproduction and dissemination capabilities of other information systems so that they are complementary./
42. Graphic drawing of the system.	To fulfill these objectives, a system of four interrelated components is being proposed. These components are: Acquisition and selection, materials preparation and referencing, duplication and distribution, and user services./
43. Title: Acquisition and selection, Identify, acquire, select.	The purpose of the acquisition and selection component is to identify, acquire, and select military curriculum materials./
44. Photograph of materials arranged on a table.	This process includes identification of military courses, acquisition of specific course materials and selection of materials applicable to civilian vocational and technical education programs./
45. Drawing of materials on a table with an evaluation sheet visible.	Operational procedures will be recommended for the transfer of military curriculum materials from the military branches to the system so that all appropriate new and revised course material is available for selection. Course material will be evaluated according to its adaptability to civilian education and according to the priorities for needed civilian materials./
46. Title: Preparation and referencing, Index materials, package materials, prepare catalogs.	The second major component of the proposed system is materials preparation and referencing. Its purpose is to classify and index acquired materials and prepare them for use by civilian vocational and technical educators.

SLIDE	AUDIO
47. Drawing of several military material catalogs.	Because this component primarily deals with analysis of collected materials, it will be responsible for preparing catalog entries describing available materials. Other informational systems will be asked to cooperate in announcing available curriculum materials./
48. Title: Duplication and distribution, process orders, keep records, maintain inventory.	The duplication and distribution component will maintain the collection of all curriculum materials available through the system. It will receive orders, reproduce the material, prepare billings, distribute the requested curriculum materials, and maintain bookkeeping records./
49. Drawing of films. filmstrips, audio tapes, slides, transparencies and booklets.	Both printed and audiovisual materials will be reproduced and distributed./
50. Repeat Slide #40	Because this component is most directly providing the service requested by educators, it must be particularly geared for providing efficient interaction with vocational and technical educators./
51. Multi-screen drawing of, A ordering form, A calendar on a wall with a two week period highlighted, A scale with military and commerical balancing, A postman delivering a package with military materials on it.	Factors to be considered include the ease and simplicity of ordering procedures. The speed and efficiency of filling orders, the cost of materials, and the reliablility of delivery systems. Orders for material should be received either by mail or toll free telephone on simple requisition forms. Approximately ninety percent of all orders should be processed in less than two weeks at a cost competitive with that charged for commercial materials/.
52. Graphic drawing illustrating the system and other information systems.	To avoid duplication of effort and to take advantage of existing information systems, the duplication and distribution component will make referrals to the Aerospace Education Foundation, the U.S. Naval Institute, the National Audiovisual Center, and the Superintendent of Documents regarding materials available from these agencies./

SLIDE	AUDIO
53. Title: User Services Negotiate orders, technical assistance, Promotion, assess user needs.	The final major component of the proposed system is user services. This component provides for the overall interaction of the system with teachers and various facilitating groups such as curriculum specialists and state curriculum coordinators./
54. Graphic drawing of the system and linkages.	Linkages in every state with State Departments of Education, Curriculum Coordination Centers, Research Coordinating Units and professional associations will facilitate communication with the education community,/
55. Drawing of a stack of letters on a table, two opened and visible with complaint on one and satisfaction on the other.	This communication process includes an ongoing evaluation of the system through solicitation of feedback from its users. Feedback channels include user surveys and unsolicited user comments./
56. Drawing of a civilian walking into a school with military curriculum materials under his or her arm.	During the first several years of the system operation the military curriculum materials will be field tested with civilian vocational and technical educators to determine the level of materials acceptability./
57. Split screen drawing of a civilian on the telephone at a table with a military formal school catalog visible and a civilian at the front of a room of people pointing to a blackboard with System printed on it.	An "Informational Search" section of the component will attempt to acquire for users those programs not included in cataloged material. The user services component could also provide technical assistance in the form of consultation and workshops on utilizing the system and military curriculum materials./
58. Drawing of a graph illustrating time and level of implementation.	Implementation of this system should be gradual and systematic./
59. Drawing of people around a table of materials discussing the materials.	The amount of time required for implementation is dependent upon the necessity to provide extensive awareness activities to acquaint civilian vocational and technical educators with the system and/

SLIDE	AUDIO
60. Title: Basic Text, reference and supplement.	the need for additional studies of how educators will use available information before packaging and catalog format decisions are reached./
61. Title: Priorities, printed materials, acquire material, test catalog and simplify acquisition.	Although a graduated implementation process will be necessary to take full advantage of the potential of the system, printed curriculum material will be available to educators within a short time of the inception of the system. Other activities which will be initiated during the first year include acquiring materials, making printed material available, developing and testing of a prototype catalog and procedures to have military materials made available to the system.
62. Graphic drawing of the system and other delivery systems.	Several curriculum materials delivery systems will be field tested at the same time as acquaintance and familiarization activities are taking place. These tests and the reaction to the materials distributed will be used to evaluate the effectiveness of the delivery approaches. Modifications will be made as necessary.
63. Repeat Slide 57	Also during this time a monitoring and screening procedure will be developed and implemented for new and revised curriculum materials. Workshops and consultant services will be made available to vocational and technical educators in assisting them to use the system and military curriculum materials.
64. Drawing of a collection of audiovisual material and equipment.	Audiovisual educational materials will be made available based upon the results of the field test. Because of the costs involved in reproducing these media, the results of feedback to the system and pilot programs will determine methods to be used for their distribution./

SLIDE	AUDIO
65. Graphic drawing illustrating staff and years needed for implementation.	A minimum of five years should be allowed for full implementation. A staff of seven to eight persons will be adequate for implementation and operation of the system./
66. Repeat Slide #42.	In considering the required funding for implementation of the system it should be noted that all four major components of the system design are interrelated. Acquisition and selection, materials preparation and referencing, duplication and distribution, and user services are all necessary to delivering the curriculum materials to civilian educators./
67. Repeat Slide #42 with a section lifted out of each component.	For this reason any reduction in financial resources should be reflected by reductions in the level of effort by all four of the components./
68. Split screen drawing of slide #64 and slide #57 with "Reduce" supered over in Red.	The first activities to be eliminated or reduced would be the distribution of audio-visual materials because of their expense to reproduce. This should be balanced against their effectiveness and wide-spread usage as educational tools. A second area of cutback could be in user workshops./
69. Title: User Needs, corresponding course objectives, modification of materials.	Considered increases in the level of funding beyond that proposed could be reflected in additional studies of user needs, ensuring that the military course objectives correspond with civilian course objectives, or more extensive modification or adaptation of military curriculum materials for civilian use./
70. Drawing of a military person handing curriculum materials to a civilian.	The implementation of this system would make available to the vocational and technical education community thousands of hours of curriculum which can be readily adopted or adapted to civilian use. Military curriculum materials have been developed under rigorous standards, are often criterion referenced and self-paced, use much of the latest educational technology, and are constantly updated. The civilian community can and should take advantage of this outstanding resource./

SLIDE	AUDIO
71. Repeat Slide #42	Implementation of the system is an essential next step in accomplishing this goal./
72. THE END	MUSIC UP.
	MUSIC OUT (STOP TAPE)